

## **Resveratrol-like drug works in humans-Sirtris**

8th Jan 2008

Reuters

CHICAGO (Reuters) - A drug that exploits the benefits of a component in wine proved safe and showed signs that it might improve blood sugar control in people with the most common form of diabetes, Sirtris Pharmaceuticals Inc said on Monday.

The results come from the first human study of a drug that targets a family of genes called sirtuins that control the aging process in humans.

The drug mimics the effects of resveratrol, a chemical in red wine that has been shown in several studies to prolong the life of mice and reduce the advance of age-related diseases, such as diabetes.

The small study showed the drug significantly improved the ability of people with type 2 diabetes to use a type of sugar called glucose, the body's main source of energy.

People with type 2 diabetes do not make or effectively use insulin, the hormone that helps convert sugar into energy.

The 28-day study was designed to show the drug was safe and could be given in once-daily doses. It cleared both of those hurdles, and showed signs that it may work as a treatment.

Of the 98 people in the study, about one-third took a 2.5 gram dose of the drug; one-third took a 5 gram dose; and one-third took a placebo.

Both doses were found to be safe and well tolerated and levels of the drug remained consistent in the blood over the 28-day period, the company said. But the drug also improved glucose tolerance in an oral test and showed a trend toward lowering glucose levels in the blood.

"I was unsure if it would work at all. The fact that we saw a signal is fantastic," said David Sinclair, an associate professor of pathology at Harvard Medical School and a co-founder of Cambridge, Massachusetts-based Sirtris.

The compound, dubbed SRT501, can be absorbed in the body more easily than the red wine compound resveratrol, the company said.

Sirtris has already started a larger drug study. The research is at a very early stage and it may take years before the drug could be submitted for approval.

Sinclair said the company is also working on a similar compound that is 1,000 times more potent than resveratrol. Sinclair said the company hopes to start that study this year.

He said many large pharmaceutical companies are working on the sirtuin longevity genes. "Sirtis is in discussions with large pharmaceutical companies about partnering," he said.

Type 2 diabetes, the kind that comes from too little exercise and a poor diet, accounts for about 90 percent of the 180 million cases of diabetes around the world, according to the World Health Organization.

## **Red Wine Drug May Help Diabetes Patients**

8th Jan 2008

eCanadaNow

Toronto (eCanadaNow) - One of the parts of red wine has been proving to be safe and is showing signs that it could benefit people with sugar issues, and people with diabetes. The first study of the drug in humans has been completed recently with promising early results. The drug aims specifically at a family of human genes called sirtuins. These sirtuins control much of the process of aging in human beings. In the study, the drug appears to imitate or mimic resveratrol, which is a specific chemical in red wine. Several different research studies have been conducted that resulted in lab mice living longer and apparently a reduction in diabetes also in mice.

The research done was the results of a small study that shows the people with Type II diabetes appear to benefit the most from this drug. The ability of people to use glucose appears to be better with those in the study that took the drug. Type II diabetics have issues with insulin production and usage. Insulin is the natural human hormone that takes sugar and helps convert it into energy. The study was a month in duration and showed the drug can be administered once a day and that it is proving safe for use.

Ninety-eight people participated in the study, one third were given a placebo. One third took a five-gram dose, and a third of the people in the study took a two and a half gram dose.

In both cases of the actual drug being administered, both doses were proved to be safe, and apparently well tolerated. Levels found in the blood stream of the drug remained fairly constant throughout the month long trial. Glucose levels were also made better in an accompanying oral test that was given.

## **Longevity in a Pill?**

23rd Jan 2008

ScienceLine

Will a pill someday be able to prevent some of the most debilitating effects of aging, including cancer and diabetes? It's not as far-fetched as it sounds.

A team of scientists has developed a novel class of drugs aimed at doing exactly this, according to a study published in the Nov. 29 issue of the journal Nature. These drugs

have been shown to improve the metabolism of obese mice, allowing them to stave off obesity-related diseases and live longer, according to David Sinclair of Harvard Medical School. However, these therapies have not yet been tested in humans and may be a long way from pharmacy shelves.

“The goal is to keep people healthy for longer,” says Sinclair, the founder of Sirtris Pharmaceuticals, the company that is developing the drugs.

These new drugs are designed to mimic the effects of calorie restriction. In mice and in people, cutting calories not only prevents diseases, it also extends lifespan, says Joseph Baur, a pathologist at Harvard who is researching the biological mechanisms of aging with Sinclair. However, for such a diet to be effective, people would have to give up one-third of their daily consumption of food – quite a difficult task for those already struggling with treating type 2 diabetes and obesity.

Enter Sinclair’s drugs and the naturally occurring compound that inspired them: resveratrol.

Found in grapes and red wine, resveratrol mimics the anti-aging effects of calorie restriction even in animals that keep eating high-calorie foods. In a 2003 study, Sinclair and Baur showed that obese mice fed a high-calorie diet plus resveratrol lived longer on average than other obese mice – either by preventing diseases of aging or increasing lifespan. Previous studies have shown that resveratrol can extend the lifespan of worms and flies by up to 40 percent, and yeast and fish by almost 60 percent. Despite its success in simpler organisms, resveratrol is probably not powerful enough to have the same effect on humans, experts say.

Resveratrol’s capabilities, however, are what have led Sinclair and other researchers to design drugs that act like resveratrol but are much more powerful.

“We have tested about 3,000 molecules,” says Sinclair. “These molecules are heavily improved through chemistry” to make them 1,000-fold stronger than resveratrol, he adds.

So what is the secret to the health benefits of calorie restriction, resveratrol and the new drugs? Research strongly suggests that it is their ability to activate proteins called sirtuins, or specifically SIRT1 in humans. Sirtuins are critical enzymes because they regulate several key processes associated with aging, including glucose and insulin production, fat metabolism, and cell survival. When activated, sirtuins can enhance these functions to help prevent the onset of diseases like obesity, diabetes and cancer.

In the 2007 Nature study, Sinclair showed that by activating SIRT1 in obese mice, the drugs were able to improve insulin sensitivity, lower glucose levels and increase the capacity of mitochondria, the cell’s powerhouses.

Sinclair's drugs, called SIRT1 activators, will initially be targeted at patients with type 2 diabetes. The hope is that these drugs will decrease glucose levels in diabetics, says Sinclair.

Some other experts agree that resveratrol, and drugs that mimic it, appear promising. "I have seen up to a 40 percent extension of worm lifespan myself [with resveratrol], so I have no reason to expect humans to be the exception," says Coleen Murphy, a molecular biologist at Princeton University who studies longevity and aging.

However, not everyone is convinced that the benefits will apply to humans. "Where is the data in patients?" asks Bharat Aggarwal, co-author of the book "Resveratrol in Health and Disease" and a cancer researcher at University of Texas. "Not a single human clinical trial has been completed yet" for resveratrol or the new, more potent drugs, he says.

Despite the lack of conclusive data, extensive media attention surrounding Sinclair's previous studies has helped create a booming market for resveratrol products even before their effectiveness has been verified in humans. In the year after Sinclair reported his initial findings in November 2006, sales of resveratrol supplements, made from red wine extract, grew by more than 300 percent.

In a four-week period after the same 2006 report from Sinclair, wine sales increased by 8.3 percent compared to the previous year, according to ACNielsen, which tracks wine sales in stores.

Even Sinclair agrees that the publicity has created a misleading portrait of the possible benefits. There is not enough data yet for Sinclair to predict exactly how many years the new drugs will extend human life. "People might end up living longer in a healthy state, but I don't think people will be living an extra hundred years," he says.

While the Harvard researchers believe in the potential of these drugs, they don't want them to replace other aspects of healthy living. "People are always looking for a shortcut, but I think it would be very dangerous for people to get the idea that they could be 'immune' from the effects of obesity and a sedentary lifestyle," Baur says.

Preliminary trials of the new drugs in diabetic patients will begin at the start of 2008, with results expected in less than six months, says Sinclair. By 2012, he hopes to have a diabetes drug approved by the Food and Drug Administration and available to the public.

Resveratrol drugs are also being developed by other institutions for cancer prevention. Early clinical trials by the National Cancer Institute are looking at cancer prevention in healthy patients, while a 2007 study at University of California, Irvine is testing how well resveratrol can treat colon cancer. In the UC Irvine study, researchers found compelling preliminary data that resveratrol blocks a signaling pathway known as the Wnt pathway, which is activated in over 85 percent of colon cancers. There are no results yet from these trials.

Despite all the work being done to design drugs that activate sirtuins, other studies indicate that sirtuins are not the only way to prevent diseases of aging and increase longevity. Researchers have discovered that mice lacking a gene called p63 – which is also present in humans – age much faster than mice with the gene.

Premature aging has also been identified in mice deficient of a hormone called Klotho. A team of scientists have over-expressed Klotho in mice, increasing their lifespan by 19 to 31 percent compared to normal mice.

“I don’t think that resveratrol and sirtuins are the end of the story,” says Princeton’s Murphy. “There are plenty of results suggesting that aging and longevity can be affected by a number of pathways and processes, so there are likely to be other ways to chemically manipulate the rate of aging in higher organisms, including humans.”

## **Blues in Dixie**

25th Jan 2008

Swnewsherald

If you don't, you probably should — blueberries, that is. In case you haven't heard (and you probably have), these little berries are among the best gifts you can give your body. For one thing, studies by scientists with the Agricultural Research Service (ARS) have shown that foods high in antioxidants (and blueberries definitely fall into that category) are truly "brain food."

In experiments in Boston, the ARS scientists studied three groups of rats — 20 rats per group — for about three months. One group of rats ate a standard diet of grain-based chow. A second group ate the chow plus blueberry extract equal to one cup daily for humans. A third group was fed chow with strawberry extract equal to one pint daily for humans. All of the rats were treated to accelerate the aging process.

At the end of the study, the aged rats that got the blueberry or strawberry supplements were much better able to find and even remember the location of an underwater platform, compared with the rats that only ate the grain-based chow.

Other ARS scientists in Mississippi have done studies showing that pterostilbene (pronounced "tear-oh-STILL-bean"), a component in berries and grapes, can actually inhibit cancer! The compound strongly suppresses a type of an enzyme that activates cancer-causing processes. This enzyme, called cytochrome 450, sets off a variety of compounds known as "procarcinogens" that can turn substances such as cigarette smoke and pesticides into cancer-causing agents.

Pterostilbene is actually a derivative of another compound called resveratrol, which is found in large quantities in the skins of red grapes. Resveratrol has gotten a lot of media attention for its cardiovascular and cancer-fighting benefits. But the ARS studies in Mississippi demonstrated that pterostilbene had much stronger inhibitory activity than resveratrol against a particular form of cytochrome 450.

If you're like me, perhaps you've always thought of blueberries as a Northern treat; remember Miss Gravelly serving tea and highbush blueberry muffins on her front porch on that gorgeous Vermont fall day in "The Trouble with Harry"? But other ARS scientists in Mississippi have done much more than just show that blueberries are good for us; they've made those blueberries considerably more accessible!

To explain how, we have to introduce another lady — "Camille" — but she certainly didn't act like a lady when she visited the Gulf Coast back in 1969. In fact, Hurricane Camille essentially wiped out that region's tung oil industry. That's when the ARS scientists began brainstorming ideas to find another good crop for the area.

The winner was blueberries. Those ARS scientists were actually the first to introduce the blueberry to Mississippi and the rest of the Gulf Coast region.

It was a surprising choice, because those fragile, tender berries didn't seem likely candidates to stand up to the Deep South's sultry summers. And there was the pest problem: Since Mississippi has more warm days, the bugs have a longer period each year in which to reproduce and feast on farmers' crops. But the ARS scientists knew a secret: Rabbiteye blueberries are actually native to the southeastern United States.

In the 30-plus years since those ARS scientists first thought of bringing commercial blueberry production to Mississippi, they've developed and released 13 different blueberry cultivars, some of them to international acclaim.

More recently, they've come out with a variety that might interest you, even if you only have a small backyard garden. The newcomer is an ornamental blueberry shrub that makes a great addition to a southern garden or an urban patio. Called "Native Blue," it offers spectacular foliage that ranges from deep green to light pink, depending on the season.

The ARS scientist who developed "Native Blue" says it is a nice complement to other southern ornamentals such as azaleas, camellias and crapemyrtles. And at a mature height of just 3 feet, you don't have to worry about it taking over your garden.

Of course, it produces berries, too — small, sweet and extremely high in anthocyanins, antioxidants that reduce the incidence of cancer and other chronic diseases. But you'll probably have to move fast to beat the birds to those berries!

## **5 ways to Staying Young with Dr. Oz Anti-Aging Checklist on 'Oprah' TV show**

5th Feb 2008

Best Syndication

On today's 'Oprah' TV show we received quite a lot of information from Dr. Oz about ways that you can reverse aging. Through diet and exercise and lifestyle habits you can easily put into place an anti-aging plan.

Oprah is 54 years old and she said it has hit her like a bulldozer. You have to work harder just to stay in shape. In January Bob Greene has started this year's 'Best Life Diet.'

The Anti-Aging Ultimate Checklist is summarized as follows:

1. Food
2. Exercise
3. Meditate
4. Sleep and Sex
5. Vitamins

The popular series health books that have been co-authored by Dr. Mehmet Oz and Dr. Michael Roizen have been bestsellers. More discussion about anti-aging and reversing your age is discussed in their book, "You: Staying Young the Owners Manual for extending your Warranty."

What foods should be in your refrigerator?

1. Antioxidants help to prevent damage during the process of oxidation. Dr. Oz uses the example of an apple turning brown when the air hits it but if you put on lemon juice it will prevent the oxidation from occurring. Dr. Oz showed us foods that are rich with antioxidants which are blueberries which he said are also referred to as brainberries. Dark colored foods help to carry antioxidants. Five fistfuls of antioxidant rich foods a day. Colorful foods often are full of antioxidants.
2. Broccoli is beneficial in more than one way. Dr. Oz explains that this vegetable can help lower cancer risk. Oprah said that broccoli can also help the thyroid as well.
3. Dr. Oz continued to explain that tomatoes when they are heated up with a little oil will help to deliver the lycopene, which is another antioxidant.
4. Acai is a fruit that comes from the Rainforest in South America. It is loaded with antioxidants.
5. Green or White Tea was recommended by Dr. Oz. He suggested that you drink 4 cups of green or white tea each day. Polyphenols and catechins are found in the teas that are believed to contribute to health benefits. Green tea is very young and it hasn't been dried much, while white tea is not dried at all which is hopefully going to improve the antioxidant health benefits.
6. Red Wine was recommended by Dr. Oz and suggested that 1 glass or serving was enough to help with getting resveratrol which helps in preventing your cells from aging. Dark grape juice will also have some resveratrol. Light colored grapes don't offer the same kind of benefits.

Dr. Roizen co-author with Dr. Oz has created a test that he gave all of the audience members. The test is also available for free on their website at:  
<http://www.realage.com/reg/regvar/st1.aspx?mod=LONGFORM>

They had a 60 year old lady that Dr. Roizen said that she is closer to 48 years old. She looked really young. She has kept up with yoga for over 22 years. She does belly dancing too. She has a passion of reading and writing regularly.

Another lady was 63 years old and Dr. Roizen said that she is barely 50 years old based on her real age score. She looks great, but had a little bit of grey hair and wrinkles. Dr. Roizen said that she meditates for a long time, she sleeps well, and eats a balanced diet. Her passion in life is riding horses regularly. Dr. Roizen said that having a passion in life is worth 8 years of your anti-aging goals.

Another woman is 44 years old, but rates at almost 60 years old with the real age test. She is a smoker that does not exercise and has a lot of stress both at home and at work. She doesn't deal well with the stress. She has smoked for over 30 years. They offered to pass her the blueberries, because she said to pass the blueberries. She gets the blueberries and said jokingly that she is not going to share this with the other audience members.

Spices full of anti-aging secrets.

Cinnamon can decrease blood sugar levels and lower cholesterol levels, especially in those that have type 2 diabetes.

Ginger can decrease your blood pressure, alleviate arthritis pain by reducing inflammation, and reduce your risk of cancer

Tumeric can also help arthritis sufferers. Tumeric can be found in Curry. Curry has been shown to relieve arthritis pain, and prevent Alzheimer's disease.

Paprika and Cayenne Pepper has been shown to help reduce high blood pressure and to also improve circulation.

Rosemary is very important for learning. Dr. Oz showed Oprah rosemary and explained that it makes you smarter because it helps you focus.

Spices that are dried have almost the same effect as the fresh ones said Dr. Oz.

Fiber is important. Dr. Oz showed a bowl of steel cut oatmeal because you get more fiber that way. Instead of using hot water use apple juice said an audience member, it tastes really good prepared that way. Dr. Oz said to stay away from white flour. He showed artichoke pasta that has extra fiber.

Dr. Oz said that it has to say 100 percent whole grain to really be worth eating. He recommends eating beans for a good source of fiber.

A lady in the audience asked Dr. Oz about when she changed her diet and had to go bathroom at the most inopportune time. She wants to know how to incorporate more fiber into her diet without the side effects of having to go bathroom all the time. Dr. Oz said that you have to work build up your dietary foundation of fiber intake a little bit at a time. If you use Beano it can help prevent gas from eating beans. Not mentioned on the show but equally important, adequate water intake can also be helpful when eating more dietary fiber.

Dr. Oz found chia seeds are full of fiber that come from South America. He gave Oprah a cupcake made with Chia. It adds more fiber and Omega 3 fatty acids. Oprah said that she takes the Flax seeds whole. Dr. Oz said that you have to grind up the flax seed to get the benefits of the Omega 3 fatty acids. You grind it up to get the healthy fats out of the foods. You can also get Omega 3 in walnuts. Fish has Omega 3 from spirulina algae. Dr. Oz made guacamole with spirulina algae. Oprah tasted it and it looked black in color, not that appealing. She said it wasn't that bad.

Olive oil you need 1 – 2 tablespoon every day. Dr. Oz said that you should put the food in the olive and then put it in the pan. If you heat the oil to much it will cause the healthy oil to be damaged.

Dr. Oz and Dr. Roizen said that the next part of the anti-aging battle is exercise. Another audience member asked Dr. Oz why she keeps gaining weight despite her exercising and eating healthy. Dr. Oz said to consider your waist as her health assessment and not necessarily the scale. She could have gained weight from exercising and muscle increase. He had her come onto the stage, and said that she probably is not pushing herself enough. He showed us how to calculate a heart rate formula to work within for cardiovascular exercise. The formula is take 220 and subtract your age. Take this result and multiply it by .80. This gives you your target heart rate. Her ideal heart rate is 140 beats per minute. She had her target heart rate goal be reached too fast and Dr. Oz thinks that she needs to work more on her fitness.

Dr. Oz showed exercises that can help build muscle mass. He demonstrated the front lunge. Don't let your knee pass over your toe. The next is to do leg lifts by laying your back on the floor and lifting your legs off the ground to strengthen your core stomach area. Next he showed how to do pull ups. You can by a bar at home to install so you will have one easily accessible. He had a hard time originally doing pull-ups originally but he has worked up to around 20 of them after working at it. Dr. Oz did 21 pull-ups on the show.

Get the heart rate up to your target at least 3 times a week and do strength training 30 minutes weekly. You should always consult with your doctor before beginning any kind of exercise program as a pre-cautionary measure.

Dr. Oz said that you need to be flexible. You should be able to touch the floor. He showed various yoga poses; the plank, the up dog, the downward facing dog, salutation,

and warrior pose. He also recommends tree pose for improving balance. He said to say yummm and meditate during the yoga poses. Dr. Oz said to do it in your bathroom so that nobody will find you there. Prayer is meditation. You need a few moments to yourself.

Lack of sleep is aging us, said Dr. Oz. You need to get sleep to rejuvenate ourselves. Lack of sleep will strip years off of your age. When the sun went down before modern civilization we naturally slipped into sleep. He recommends recreating this by having a routine that quiets us down instead of stimulating us right before bedtime. He said if you don't floss your teeth you could reduce your lifespan by 5 years.

Dr. Oz said that you need sex with your partner 2 to 3 times a week. Women benefit by getting a boost in oxytocin, and men get more testosterone. Dr. Oz joked to sleep naked and to install mirrors.

Oprah wanted to know more about vitamins. Dr. Oz discussed vitamin D. The biggest deficiency is with vitamin D. Take 1000 IU he suggests. Over half of all Americans are deficient in Vitamin D. This vitamin has been associated with preventing cancer, reducing heart problems, changing the outcomes risk factors for multiple sclerosis, and also risk factors associated with deficiencies in juvenile diabetes. Because of the sunscreen that is used in our society, even people in the south are getting less vitamin D from the sun.

Calcium with magnesium is important. Calcium supplements will constipate you, but the magnesium will help prevent that.

DHA omega 3 fish oil supplements he recommended.

Dr. Oz discussed multi-vitamins. He said to cut the vitamins in half with one being taken in the morning and one in the evening. Menstruating and pre-menopausal women will need some iron supplements. Pre-menopausal women take no more than 5000 IU of vitamin A. Men and post-menopausal women should take no more than 2500 IU of Vitamin A and they need no iron supplements. The multi-vitamin Dr. Oz recommends will be listed on Oprah.com.

## **Apples May Improve Health**

11th Feb 2008

The Cornell Daily Sun

An apple a day may now actually keep a specific doctor away. Recently, Cornell food scientists discovered that apples, along with a family of other fresh fruits and vegetables, may diminish the risk of developing neurodegenerative disorders, such as Alzheimer's disease.

Prof. Chang Y. Lee, Food Science and Technology, lead researcher in the study, has teamed with visiting scientists and a slew of graduate and postdoctoral students to tackle research that has spanned more than 15 years.

According to Lee, in the early stages of the study researchers identified the chemical structures of a number of bioactive phenolic compounds in apples. These phenolic compounds participated in a variety of functions performed by antioxidants, which include anything that inhibits reactions promoted by oxygen.

Putting the two findings together, Lee reported that his team found these phenolics protected in vitro oxidative stress-induced neuronal cell death. Additionally, according to an article by the team published in a December 2004 edition of the Journal of Food Science, oxidative stress is believed to be responsible for the onset of neurodegenerative disorders such as Alzheimer's disease. Put simply, the researchers proposed that the newly discovered compounds in apples may combat the ingredients for a neurodegenerative disease.

More specifically, Lee explained that his team focused on in vitro rat neuron cells that had been exposed to oxidative stress.

“We found that these fruits prevented oxidative stress-induced neurotoxicity and membrane damage,” Lee said.

According to the article it published, the team exposed a number of the rat cells in question to various concentrations of the apple phenolics, while depriving a different group of cells from contact with the phenolics. After exposing both groups to hydrogen peroxide for two hours, those that had not been pre-treated with the phenolics showed an increase in oxidative stress levels, whereas those that had received the pre-treatment showed a reduction in the stress levels.

Since Alzheimer's disease is linked to heightened oxidative stress levels, the phenolic compounds in apples could thus theoretically be linked to the prevention of the disease.

What began as research strictly confined to the biochemical and nutritional aspects of apples later grew to include the study of the health benefits of comparably popular fruits such as bananas and oranges.

---“We published two years ago a [work] on apples. Since then I have received many inquiries from the general public about oranges. That is why we conducted this additional research,” Lee said.

Upon testing bananas and oranges in a similar fashion to that discussed above, the researchers found that apples showed the highest reductive activity.

According to Lee, the team located more antioxidants in apple skins than the apple flesh, suggesting that the risk reducers for disease are concentrated on the surface of the fruit.

Furthermore, Lee reported that the apple phenolics they studied in vitro had cancer chemo-preventive effects as well as tumor-preventative activity. The latter findings hint towards apples' possible ability to hinder the onset of cancer.

Cornell researchers, however, are not the only ones interested in the non-taste components of food.

According to Lee, several scientists at a number of institutions are currently conducting research on the health benefits of fruits, vegetables, herbs and nuts, among others.

“[There is] a group at Rutgers University working on green tea, a Harvard University group working on resveratrol in wine and grapes, and a [United States Department of Agriculture] group in Boston working on blueberries [and their effects] on memory and dementia,” Lee said.

As the Cornell team looks ahead to the future, it hopes to incorporate actual human subjects. Currently, according to Lee, all of the team's findings are elicited from in vitro studies, and therefore can only prove the possibility of the reduced risks of disease.

“We do not know yet the exact bioavailability of those antioxidants in the human body,” Lee said. “In order to confirm the final certainty, we should have large scale human clinical studies — that is the future study.”

## **Malfunctioning Mitochondria May Cause Heart Disease**

15th Feb 2008

Wired

Scientists say they've found a new explanation -- and a perhaps a path to a new cure -- for heart disease.

In a study published today in Science, researchers led by UCLA molecular medicine professor Douglas Wallace modified a single mitochondrial gene in mice.

Their hearts quickly wore out and broke down.

Mitochondrial defects, which accumulate naturally during the course of a lifetime, have previously been found in diseased human heart tissue. However, it wasn't clear whether the defects were a cause or an effect of heart disease. The UCLA findings offer direct evidence of a causal connection.

By finding ways to rejuvenate or protect these cellular power generators, it may be possible to prevent heart disease, which kills over 600,000 Americans every year -- and that could be just the start.

"This provides strong support for the concept that aging and age-related diseases are associated with a decline in mitochondrial functional associated with the age-related destruction of mitochondrial DNA," said Wallace in an email.

Mitochondria are structures called organelles, separate from the DNA-containing cell nucleus but vital to cellular functioning. They convert chemical energy provided by the food we eat into a form usable by our cells.

The process goes on constantly in every cell in our bodies, but over time the parts run down. Stray oxygen molecules with an especially unstable configuration latch on to DNA in both the nucleus and, more dangerously, in mitochondria themselves.

Mitochondria have their own genes -- just seventeen altogether, but of paramount importance, and just a few mutations can cause malfunction, even shutdown.

To model the effects of this degeneration, the researchers added a mutation to mitochondria in a mouse egg. Once fertilized, the egg developed into a mouse riddled with defective mitochondria and, it turned out, defective hearts.

Compared to normal mice, their cardiac tissue was thick and weak, robbed of its natural strength -- the same problems found in human heart disease. The mice developed their disease after just a year; normal mice don't have heart problems until they're at least two years old, said Wallace.

As with any rodent study, certain caveats are required, but other scientists have found high mitochondrial mutation rates in diseased human hearts. The Science study fits with those findings, suggesting that the connection is direct.

Even more tantalizingly, Wallace and other mitochondrial medicine researchers believe that other age-related diseases, from diabetes and Alzheimer's to cancer, have the same mitochondrial roots.

They're now searching for ways of fixing that damage with mitochondria-targeting drugs. Among these are resveratrol, a compound that's gained notoriety among longevity hackers and was recently shown to prevent diabetes in mice.

If the drugs work, they could change the way people live -- and die. And if they make it from the lab to people, things really get interesting: who owns them?

## **Israeli doctors are the newest tourist attraction**

16th Feb 2008

The Jerusalem Post

Israel offers many pluses to foreigners who want to undergo operations or rehabilitation, receive medical treatment or get diagnosed - excellent medical facilities, staff who speak

a wide variety of languages, significantly lower prices than in Western countries, a welcoming climate and high-level tourist facilities. But busy as they are with taking care of Israelis, many hospitals, clinics and other facilities haven't paid much attention to the profitable overseas market.

Now the Health and Tourism Ministries have produced *Meditour*, a colorful 40-page English-language guide to medical tourism in Israel. It is being distributed directly by the ministries to travel agencies, journalists and hospitals, and at international medical conferences held here.

The first issue, with a cover featuring photos of Jerusalem, the Dead Sea, personal connections between doctor and patient and a heart shaped by four hands, gives contact information about all the country's medical centers, both public and private, and information about services such as Yad Sarah available to tourists with special needs.

One article stresses that Israeli experts have more experience performing fertility treatment (in-vitro fertilization) than those in almost any other country, and charge much less. In the US, for example, a single IVF treatment cycle can cost between \$16,000 and \$20,000, while the rates here range around \$3,250. Israeli plastic surgeons also offer relatively inexpensive surgery. Then there are the incomparable Dead Sea spas and medical centers for treating a variety of skin disorders such as psoriasis, and to relieve heart, joint and respiratory diseases. The magazine also lists tourists sites where patients can go during breaks in their treatments.

## SMOKING CAUSES ORGAN AGEING

Many people can pick out smokers by the premature wrinkles in their skin - but the body's inner organs also deteriorate due to smoking. Now two separate studies published in the *American Journal of Respiratory Critical Care Medicine* and the *American Journal of Physiology* explain the connection. Toxins in tobacco smoke neutralize a gene that helps protect against premature ageing, the University of Rochester (New York) reports. Dr. Irfan Rahman of the university's lung biology and disease program discovered the role of the gene, called Sirtuin (SIRT1), in lung disorders. Rahman investigated how the 4,700 toxic compounds in tobacco smoke attack lung tissue. SIRT1 belongs to a class of genes that regulate chronic inflammation, ageing and cancer, he wrote, but environmental factors such as cigarette smoke or pollution can decrease its production in the lungs. He discovered that the gene not only slows aging, but that if it is neutralized, the lungs are exposed to destructive inflammation and diseases such as chronic obstructive pulmonary disease and cancer. The researchers are now looking into how the antioxidant resveratrol, which is extracted from red grape skins, affect the gene.

## BOOK TO FIGHT JUNK FOOD

Getting kids to eat nutritious rather than junk food is a difficult task, given all the temptations on supermarket and kiosk shelves and in friends' homes. Serving as a model of healthful eating is one way. Giving the child a colorful book on the subject can also

help. Such a book has been released by the Oranit publishing house. Written in Hebrew by Raheli Baharal, the 24-page, NIS 48 hardcover volume is called Lo Rak Mamtak (Not Only A Sweet). The mother of two sons, Baharal is also a teacher who has written two previous books for kids.

The story is about Daniel, a red-headed little boy who is "not thin [and] not fat" but always feels hungry. When his mother offers a meatball or an egg, he refuses on the grounds that he wants his food the way he wants. Apricots have pits; lettuce is full of leaves; grapefruit is too big; peas are too small; broccoli is too green; and the orange is too round, Daniel complains. He tells his mother that he learned from TV commercials that chocolate contains milk, other snacks have peanuts and ice cream has fruit. His mother responds that the ice cream never met a strawberry and the peanuts are chopped and have "forgotten" when they were harvested. Eating fresh produce and whole grains, she says, is preferable if he wants to be big and strong.

So she cuts these healthful things into geometric shapes to create puzzles and objects like cars and animals, and Daniel agrees to eat. His mother concludes that sweets and snacks are not totally forbidden, but can be eaten in small amounts, but only after one finishes a nutritious meal.

#### MAKE GOUT GO OUT

The more sugary soft drinks men consume, the more likely they are to develop gout, a joint disease that causes severe pain and swelling of the toes and other parts of the body, according to an article in the British Medical Journal. The disease, most common in men over 40, is caused by excess uric acid in the blood that leads to uric acid crystals collecting around the joints.

The incidence of gout in the US has doubled over the past few decades, showing that there are environmental factors involved, and the study showed it coincided with a substantial increase in the consumption of soft drinks and fructose (a simple sugar and the only carbohydrate known to increase uric acid levels).

Until now, men suffering from gout or having it in the family have been advised not to drink alcohol or eat a lot of meat, but they were not told to restrict their soft drink intake.

The researchers followed 46,000 middle-aged men with no history of gout. A detailed dietary survey was filled out. After 12 years, 755 of them were diagnosed with gout, which occurred much more frequently in those who consumed a lot of sugary soft drinks. The risk was significantly increased with an intake of five to six servings per week, and 85% higher among those who drank two or more servings a day. Drinking diet soft drinks did not increase the risk of gout. Fruit juice and fructose-rich fruits (apples and oranges) were associated with a higher risk of gout, but as these help prevent chronic disorders like hypertension, coronary artery disease, stroke and certain types of cancer, their consumption should be balanced against the risk of gout.

## Riding the wine wagon

17th Feb 2008

Health

To your health, cheers, but too much drink and nobody knows your name.

I ENJOY a glass of wine with my food. When the match is right, for example, salmon and Pinot Noir, or a light-bodied Chablis and oysters, the meal becomes an exquisitely enjoyable experience. I enjoy wine with music and art. A glass of champagne does wonders to a romantic evening. Wine adds much to the pursuit of beauty and pleasure.

Over the past decade, more and more Malaysians are drinking wine, especially red wine.

I initially thought that there was an Epicurean movement in the making. When I saw wine served in Chinese tea glasses at room temperature (over 30C recently) and in a raucous, noisome and odoriferous ambience, I thought again.

Instead of sipping and savouring, there was gobbling and gulping. It was not for reason of aesthetics that most of them have taken to drinking wine. It was for reasons of health!

And since the colour red is auspicious and Bin 888 is one of their favourites, courting Lady Luck is another incentive to drink wine!

If only the attainment of health and wealth were so easy and enjoyable!

I discuss the French Paradox, resveratrol – a molecule which resonates with promise – and wine and health, in particular cancer.

In the US in the early 90s, the TV series 60 Minutes aired a report on a phenomenon known as the French Paradox – the fact that the French have a lower rate of heart disease than Americans, despite a diet higher in fat.

The one thing that the American diet lacks in comparison to the French diet is red wine. Some researchers looked for a link between the consumption of red wine and heart disease and found it!

In the year following this report, Americans increased their purchase of red wine by 39%. I guess we are not alone in jumping onto the “wine wagon”; it is just that we are almost a decade behind.

Drinking small amounts of alcohol (not necessarily red wine) can reduce your risk of heart disease. Cancer Research UK is one authority that concurs. However, this applies only to men above 40 and women who have been through the menopause.

The maximum amount of alcohol you should be drinking is two units per day for women and three units per day for men. A standard 175ml glass of wine (of 11 to 12% volume)

contains two units. A premium pint of beer (5%) contains three units. Beyond that, the harm (heart disease, cancer) outdoes the good.

There is actually some science behind the supposed benefits of red wine. Red wine is rich in resveratrol. It is a part of the plant's defence system against disease.

Resveratrol has been shown to reduce tumour incidence in animals. Scientists are studying resveratrol to learn more about its cancer preventive activities in man. This research is in its infancy.

Even when resveratrol is proven to be anti-cancer, the amount you get in each glass of red wine is so minuscule, you will probably need 100 glasses of wine daily to tap its anticancer properties! In years to come, it may be possible to take a tablet of pure resveratrol. It is certainly more practicable.

Too much alcohol puts you at risk of cancer of the mouth, larynx (voice box), oesophagus (foodpipe), liver, breast and perhaps colon. Smoking and drinking together (de rigueur for a night out with the boys) increases your risk even more.

How does alcohol cause cancer? We are not entirely sure but there are several ideas.

Alcohol is converted in the body into a chemical called acetaldehyde. This causes cancer by damaging our DNA and preventing it from being repaired. Alcohol can also increase the level of oestrogen in the body and this may be how alcohol causes breast cancer. Alcohol can cause cirrhosis of the liver and this in turn causes liver cancer.

Finally, alcohol reduces the amount of folate in our blood. Folate is a B vitamin that our cells use to create new DNA correctly. Lack of folate can lead to mistakes in DNA and this may lead to cancer.

Alcoholism is not quite the problem it is in Malaysia the way that smoking is. Nevertheless, with our new affluence and the way we tend to binge, we may soon be on par with the first world.

The incidence of mouth cancer is high in Malaysia. There is a high incidence of concurrent smoking and drinking alcohol among the victims. Liver cancer is very common in persons infected with hepatitis B or C virus. With alcoholism, the risks will be greater.

In the UK, a study estimated that alcohol causes 2,000 breast cancer cases a year (out of a total of 44,000 cases). Alcoholism is not a big problem among women in Malaysia at present. However, one can never know what the future holds with the lifestyle trends we are witnessing today.

Drink by all means and be merry. But drink wisely and be the aesthete, not the alcoholic.

## **One Drink May Help Heart, But Two Is Too Many**

Extra glass negates immediate benefits to circulation, Canadian study says

18th Feb 2008

U.S News

Whether it's red wine or another spirit, the heart and blood vessels benefit slightly from one drink, but a second erases the positive effects, say Canadian researchers. A study, published in the February edition of the American Journal of Physiology, Heart and Circulatory Physiology, also raises more questions about the popular notion that red wine may be more effective against heart disease than other types of alcohol.

"We had anticipated that many of the effects of one ethanol drink would be enhanced by red wine. What was most surprising was how similar the effects were of red wine and ethanol. Any benefits that we found were not specific to red wine," Dr. John Floras, director of cardiology research at the Peter Munk Cardiac Centre at Toronto General Hospital, said in a prepared statement.

Several population studies have shown light or moderate alcohol drinking may lower the risk of death and the development of heart disease. Many studies have also reported specific benefits of red wine.

The "French paradox," in which studies have found lower rates of heart disease, despite high-fat diets, in some European countries where red wine was consumed regularly, has also spurred interest in exploring whether red wine has special protective properties.

Researchers at the Canadian center conducted a real-time study of 13 volunteers who were given either 4 ounces of red wine, 1.5 ounces of ethanol or water at random at three separate sessions over two weeks. The volunteers were healthy, nonsmoking adults who were neither heavy drinkers nor total alcohol abstainers.

The wine, a moderately priced pinot noir, contained a high t-resveratrol content, a polyphenol compound found in plants, including red grapes, that exhibits antioxidant properties. Alcohol or substances in alcohol such as resveratrol may improve blood vessel function and also prevent platelets in the blood from sticking together, thus reducing clot formation and the risk of heart attack or stroke.

After one drink of either red wine or alcohol, blood vessels in the participant were more dilated, reducing the work the heart had to do. However, after two drinks, the heart rate, amount of blood pumped out of the heart, and action of the sympathetic nervous system all increased. The ability of the blood vessels to expand in response to an increase in blood flow also diminished.

Increases in heart rate and sympathetic nerve activity are recognized markers for hypertension, heart failure and sudden death.

Floras cautioned that this study measured the effects of these drinks on one occasion only. The effects of daily wine or alcohol intake may be quite different.

"Our findings point to a slight beneficial effect of one drink -- be it alcohol or red wine -- on the heart and blood vessels, whereas two or more drinks would seem to turn on systems that stress the circulation. If these actions are repeated frequently because of high alcohol consumption, these effects may expose individuals to a higher risk of heart attacks, stroke or chronic high blood pressure," Floras said.

The American Heart Association does not recommend that anyone start drinking alcohol to prevent heart disease. Reducing risk can be done using other methods such as exercise and following a healthy diet.

## **Fruits And Vegetables - Makes You Healthy**

3rd Mar 2008

American Chronicle

Fruits and vegetables contain essential vitamins, minerals, and fiber that may help protect you from chronic diseases. Compared with people who consume a diet with only small amounts of fruits and vegetables, those who eat more generous amounts as part of a healthful diet are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovascular diseases, and certain cancers.

### Nutritive Effects

Fruits and some vegetables contain substantial amounts of carbohydrates, which supply most of the energy, used by humans, to live and perform work.

Fruits and vegetables contain generous amounts of vitamins. Vitamins regulate metabolism and help in the conversion of the fats and carbohydrates into energy.

Fruits and vegetables are rich in minerals that are necessary for the nerve and muscle function and are the building material for some body tissue.

Juice from vegetables listed below are beneficial as mentioned for the ailments.

Acidosis: Carrot, beet, cucumber and spinach

Acne: Carrot, lettuce and spinach

Allergies: Carrot, lettuce and spinach

Anemia: Beet, celery, carrot

Appendicitis: Carrot, beet and spinach

Arteriosclerosis: Carrot, celery, lettuce and spinach

Vegetable juice and arthritis: Cucumber, beet, celery, carrot and watercress

Asthma: Carrot, radish and celery

### Benefits of Vegetable-Based Calcium

Calcium is responsible for construction, formation and maintenance of bone and teeth. This function helps reduce the occurrence of osteoporosis. It is also a vital component in blood clotting systems and wound healing. It helps to control blood pressure, nerve transmission, and release of neurotransmitters. It's an essential component in the production of enzymes and hormones regulating digestion, energy and fat metabolism.

Allows you to consume an optimal amount of vegetables in an efficient manner. If you are a carb type, you should eat one pound of raw vegetables per 50 pounds of body weight per day. Some people may find eating that many vegetables difficult, but it can be easily accomplished with a quick glass of vegetable juice.

You can add a wider variety of vegetables in your diet. Many people eat the same vegetable salads everyday. This violates the principle of regular food rotation and increases your chance of developing an allergy to a certain food. But with juicing, you can juice a wide variety of vegetables that you may not normally eat.

Green fruits and vegetables contain potent vitamins, phytochemicals such as lutein and indoles, with anti-oxidants, health-promoting benefits. They provide the essential micronutrients like iron to maintain and increase the blood haemoglobin levels. Their high fibre content provide the necessary protection to the intestines and stomach and lower the glycemic index of foods eaten along with it. They help normalize blood glucose, blood lipids and blood pressure levels.

Overweight and at risk for stroke? Fruit and vegetables may be what you need say researchers. In a recent study researchers say they found antioxidants in fruits and vegetables which may reduce the risk of ischemic strokes, the most common type of stroke caused when blood clots cut off oxygen supply to the brain.

Resveratrol, found in red grapes, wine and peanuts. Resveratrol may help reduce the risk of heart disease and cancer.

## **Food Compounds That Kill Test-Tube Cancer Cells Analyzed**

4th Mar 2008

USDA

Strawberries, grapes, blueberries and some familiar seasonings like rosemary contain compounds that can—in test tubes—kill cells of a childhood cancer. Nutrition-focused research by molecular biologist Susan J. Zunino of the Agricultural Research Service

(ARS) Western Human Nutrition Research Center (WHNRC), Davis, Calif., may reveal exactly how the powerful plant chemicals fight the disease known as acute lymphoblastic leukemia.

Zunino's current studies build upon her 2006 findings about the ability of carnosol from rosemary; curcumin from turmeric; resveratrol from grapes; and ellagic acid, kaempferol and quercetin from strawberries to kill the leukemia cells. She did the work using laboratory cultures of both healthy human blood cells and cancerous ones as her model.

Her studies are of interest not only to cancer researchers, but also to nutrition scientists exploring the health benefits of natural compounds in the world's fruits, vegetables, herbs and spices.

For the most part, scientists don't yet have all the details about how plant chemicals, or phytochemicals, bolster healthy cells and battle harmful ones. That's true even for better-known phytochemicals such as the resveratrol in grapes, blueberries and some other fruits, according to Zunino.

Her investigations provide some new clues about how phytochemicals attack cancer cells. For example, she found that the phytochemicals interfere with the orderly operations of mitochondria, the miniature energy-producing power plants inside cells. Without energy, cells die.

Mitochondria exposed to resveratrol and the other phytochemicals that Zunino tested couldn't function properly. But more work is needed, to fully understand how the phytochemicals achieved that.

And, Zunino and colleagues want to know more about the phytochemicals' other modes of action that result in cell death.

She's collaborating in the investigations with molecular biologist David Storms at WHNRC; Jonathan Ducore at the University of California-Davis Cancer Center; and Navindra Seeram, formerly with the University of California-Los Angeles and now at the University of Rhode Island-Kingston.

## **Elizabeth Smoots: Straight Facts About Resveratrol**

7th Mar 2008

Kitsap Sun

Red-wine extract has leapt into public awareness based on intriguing results from animal studies. Mice fed the active ingredient, resveratrol, lived longer and had greater vitality — even with a fatty diet that made them obese. So, should we all rush out to buy resveratrol supplements?

Well, the answer for us humans remains to be seen. At present, the hype far exceeds the proven benefits.

Pssst I've got a secret to share: You can get some of the benefits without the risks when you know the right foods to eat.

### What studies show

In a study published a little over a year ago in *Nature*, two groups of mice were fed a high-fat, high-calorie diet. The first group received resveratrol supplements and the second group did not. By the end of the study, the mice fed resveratrol lived longer — adding an equivalent of 10 to 20 human years to their life span — despite the fact that they were overweight.

A similar paradox occurs in France. The French eat a rich diet and yet have one of the lowest rates of heart disease in the world. Researchers speculate that the red wine featured in the region's cuisine helps provide protection for the arteries of the heart.

### Resveratrol benefits

But a longer life span and lower rate of heart disease are just the beginning. The list of potential benefits in mice includes increased muscle endurance, improved cholesterol levels, fewer blood clots and less diabetes risk. The antioxidant and anti-inflammatory effects of resveratrol may also account for a lower rate of age-related memory loss and cancer.

Resveratrol may slow the growth of cancer cells and inhibit the formation of tumors of the lymph nodes, liver, stomach, skin, and breast in animal studies, according to the American Institute of Cancer Research. Other studies indicate that resveratrol leads to the death of leukemia cells and colon cancer tumors, AICR reports.

### Potential risks

Sound like a panacea? It may be a cure-all in mice. But very few studies of the extract have been conducted in humans. The Food and Drug Administration considers resveratrol an investigational new drug, not a dietary supplement, since the substance does not have adequate evidence of safety in humans.

Long-term side effects of the wine extract are unknown. Resveratrol has mild estrogen-like properties, making its use unwise for women at increased risk for breast cancer or other hormone-sensitive conditions. Children and women who are pregnant, nursing or trying to conceive should not take the supplement since it contains factors that may adversely affect growth. Likewise, people taking blood thinners or other prescription or over-the-counter drugs should not take the product without a doctor's approval because of the potential for drug interactions.

Recently, ConsumerLab.com published an analysis of 13 resveratrol supplements on the market. Two products contained far less than the listed amount of ingredient and another

product had a misleading label. No products were contaminated with lead or cadmium, two types of toxic metals. The report concluded: It's too early to know whether resveratrol is beneficial to people, what dose is best, and what side effects may occur.

Safest sources

Luckily, Mother Nature packages the substance in whole foods, along with a complimentary array of other natural ingredients. Grape skins boast the highest concentrations of resveratrol. Red and purple grapes contain much more of the substance than green grapes. Other plant sources include red wine, grape seeds, grape juice, berries and peanuts.

## **Cheers to this compound**

9th Mar 2008

The Star online

Resveratrol might help you live a healthier life.

STUDIES to-date show resveratrol, an ingredient found in red wine and also in the medicinal plant, *Polygonum cuspidatum* (Japanese Knotweed), can prolong the life of brewer's yeast by 60%, worms by 15%, fruit flies by 29% and rodents by 31%.

Recent studies have shown that resveratrol has multiple health benefits that help reduce the risk of many age-related degenerative diseases. Taking resveratrol may help you live longer and healthier.

Longer life?

In early 2006, Italian researchers discovered that resveratrol can extend the lifespan of turquoise killifish by 50%. Killifish lives only three months when in captivity.

The results showed that adding resveratrol to the daily diet prolonged their expected lifespan. The fish study is interesting because fish, a vertebrate, is far above yeast, worms and fruit flies in the evolutionary tree. The study also showed resveratrol slowed the progression of fish muscular problems as they grew older.

Research shows resveratrol's ability to activate the longevity gene helps to prolong life. Resveratrol activates the same longevity gene expressed during caloric restriction, the only proven way of extending lifespan.

So far, studies showing the ability of resveratrol to extend lifespan are confined to lower organisms and fish.

Unfortunately such studies on humans will take more than 100 years to complete. Since humans share many genes in common with even the simplest organisms such as bacteria and worms, it is likely that the studies in animals may have similar results in humans.

## Healthier life

What is also interesting about resveratrol is that it has many other beneficial health properties, such as antioxidant, anti-inflammatory, and other activities. These properties represent many of the known risks for developing different age-related degenerative diseases.

Recent studies have shown that resveratrol has many other beneficial health properties such as:

- Antioxidant – acts against damaging free radicals
- Anti-inflammatory agent
- Reduces blood pressure – promotes relaxation of blood vessels
- Reduces menopausal symptoms – mood swings, hot flushes etc on
- Reduces risk of developing Alzheimer's disease
- Reduces risk of developing blood clot
- Reduces risk of developing diabetes

## Resveratrol and cancer

Cancer is, perhaps, the most dynamic area of resveratrol research. Resveratrol is the first natural medicinal to have solid evidence behind it – showing that it blocks or stops many stages of cancer.

Resveratrol has been proven to fight cancer in vitro at all three stages: initiation, promotion, and progression. Resveratrol not only prevents cancer, it's being proposed as an additional treatment.

The National Institutes of Health (NIH, US) is currently sponsoring a clinical trial investigating resveratrol's ability to fight colon cancer.

## Benefits for heart and blood vessel health

Resveratrol is thought to underlie the "French Paradox", which refers to the low levels of heart disease found in France despite a population renowned of its love of wine and fatty food.

Resveratrol has been found to exert a number of potentially cardioprotective effects including:

- Increases levels of high-density lipoprotein (HDL) or good cholesterol, which protects against heart disease.
- Prevents low-density lipoprotein (LDL) or bad cholesterol from being oxidised by free radicals and it is the oxidised LDL that forms plaque that can lead to atherosclerosis, or hardening and thickening of the arteries.
- Inhibits platelet aggregation as it prevents blood cells from sticking to each other and forming clots. These clots can become lodged in a small vessel of the heart, causing heart attack, or lodged in the vessel of the brain, causing a stroke.
- Promotes vasodilatation by enhancing the production of NO (nitric oxide), which allows the blood vessels to relax, resulting in enhanced blood flow.

#### Alzheimer's prevention

Recent studies suggest that resveratrol might help prevent or ease (ameliorate) Alzheimer's disease.

One of the characteristics of Alzheimer's disease is the deposition of plaques in the brain. These plaques are caused by amyloid-beta peptides.

One laboratory study showed that administering resveratrol to cells decreased their secretion and cell's levels of amyloid-beta peptides. Resveratrol did not inhibit the production of amyloid-beta, but instead promoted its breakdown in the cells.

Although preliminary, these findings suggest a potential role for the compound in fighting the accumulation of amyloid-beta plaques in the brains of Alzheimer's sufferers.

#### Brain damage in stroke victims

"For years, scientists have advocated drinking a glass of red wine once or twice a day to help with cardiovascular health," said Grace Sun, a professor of biochemistry and part of a husband-wife research team at University of Missouri-Columbia's School of Medicine.

"Our research has shown that a compound in red wine or grapes – resveratrol can have a similar impact on brain health, and in some cases, may help minimise the damage to the brain when a stroke occurs."

#### Other benefits:

Other benefits of resveratrol recently discovered include doubling exercise endurance and also protecting mice from ill effects of obesity.

Resveratrol enabled mice that were fed with a high-calorie, high-fat diet to live normal, active lives despite being obese – the first time any compound has been shown to do that.

Resveratrol may also offer benefits in preventing or managing conditions associated with high blood sugar, such as metabolic syndrome or diabetes.

Dr David Sinclair, leader of the Harvard resveratrol study, is conducting a clinical trial to evaluate resveratrol's effects in controlling blood sugar in patients with diabetes.

All the above mentioned properties are very exciting because they represent many of the known risks for developing different age-related degenerative diseases.

It is important to understand that there are many other risk factors associated with diseases and that taking resveratrol may be one of the many important steps in risk reduction.

Improved formulation

In a new resveratrol formula, quercetin is added to help prolong resveratrol's protective action in the body.

The new formulation is in liquid form with an emulsifier added to improve further the absorption of resveratrol.

Another advantage of including quercetin is that it also has some similar health-promoting properties as resveratrol, i.e. anti-inflammatory and antioxidant. The combination has a synergistic effect in promoting health

## **Antioxidants can help blunt the damage of chemotherapy**

10th Mar 2008

Daily Herald

Can antioxidants improve outcomes for patients undergoing treatment for cancer? Although the medical research is far from conclusive, there is increasing evidence judicious use of antioxidants may improve outcomes and survival in patients undergoing chemotherapy.

One of the mechanisms by which chemotherapy kills cancer cells is believed to be through the production of very destructive molecules called free radicals. These free radicals can cause damage to the cell membrane as well as the DNA.

Unfortunately, chemotherapy is not specific enough to only attack cancer cells. Many healthy cells are also damaged or killed. Antioxidants help to protect against the damage caused by these free radicals.

It has been theorized that, during chemotherapy, the use of antioxidants may actually help to protect tumor cells as well as healthy cells. Although this may be theoretically valid, there have been very few studies to support this line of thinking.

Over the past 20 years, there has been an increasing awareness within the medical community that the judicious use of antioxidants may actually be beneficial for patients undergoing chemotherapy.

A recent, published review of the medical literature on the use of antioxidants during chemotherapy yielded interesting results. This article, published in *Cancer Treatment Reviews*, was a collaborative effort spearheaded by Dr. Keith Block, a nationally recognized expert in cancer and alternative medicine, and researchers from the University of Illinois at Chicago and the world-renowned M.D. Anderson Cancer Center in Houston.

The researchers reviewed 845 articles in the medical literature; 19 were found to be of good scientific and clinical quality and were included. The studies evaluated the effect of a number of antioxidants -- including vitamin C, vitamin E and N-acetylcysteine -- on several parameters of clinical success including survival and overall toxicity.

None of the studies demonstrated that the use of antioxidants during cancer treatment had any negative consequences on the specific cancer therapy. Indeed, those who used antioxidants during their cancer therapy had overall increased survival, better response to the medical therapies and fewer side effects and toxicities.

Sometimes doctors must limit chemotherapy because the patient can't tolerate the side effects. The nausea, fatigue, bone marrow suppression, insomnia and bowel problems can be significant. Evidence suggests patients who complete an entire course of chemotherapy have significantly greater survival. Studies have also suggested that the use of antioxidants may reduce side effects and allow a patient to complete an entire course of chemotherapy.

Some research even suggests that fish oil and resveratrol (a bioflavonoid from purple grapes) may actually improve the effectiveness of some types of chemotherapy.

There is much more research to be done, but there will come a day when specific antioxidants are given in conjunction with chemotherapy.

### **Pill to fight old age not fiction: scientist**

16th Mar 2008

Calgary Herald

For centuries, dreamers have searched for the elixir of life, the fountain of youth and the philosopher's stone.

Their goal has often been greeted with skepticism and associated with magic, sorcery and science fiction.

But Harvard medical school scientist David Sinclair -- whose breakthrough research about red wine bringing longer life has been picked up by Jay Leno, Newsweek and

Fortune magazine -- believes a pill is just on the horizon that will keep diseases at bay and allow us to become centenarians with the energy of 40-year-olds.

"I'm quite certain it's going to happen," said Sinclair, a molecular biologist who will present his research at two University of Alberta lectures, this Tuesday and Wednesday.

"This is a radical way of doing medicine where we're preventing diseases so that these animals in our lab, and hopefully humans one day, live longer, but only because they're not getting diseases that kill them."

Right now, Sinclair's "perilously glitzy anti-aging science," as Fortune magazine describes it, is being tested in clinical trials on humans, who take pills containing a immensely concentrated form of a molecule found in red wine to treat diabetes and hold back aging

"We're talking about a future where your doctor could prescribe a pill to treat your diabetes, and as a side-effect, you will have many more years free of heart disease and cancer and even Alzheimer's as a result of taking this pill," Sinclair said in a telephone interview.

Such drugs were theoretically impossible 20 years ago, but then scientists discovered aging is regulated by genes -- a regulation that could be mimicked with technology and chemicals.

Sinclair found that resveratrol, a molecule found in red-wine grapes, triggered certain cells to live longer. When the molecule was fed to fish, their lifespan increased 59 per cent, equivalent to a human living to age 194.

Mice that ate food laced with resveratrol had the physiology of lean mice and reduced their risk of death by 30 per cent. Later research found they could run marathons without training.

## **Grape skin compound fights the complications of diabetes**

18th Mar 2008

EurekaAlert

Resveratrol in grape skins could stop diabetic complications such as heart disease, retinopathy and nephropathy, research finds

Research carried out by scientists at the Peninsula Medical School in the South West of England has found that resveratrol, a compound present naturally in grape skin, can protect against the cellular damage to blood vessels caused by high production of glucose in diabetes, according to a paper published in the science journal Diabetes, Obesity and Metabolism this week.

The elevated levels of glucose that circulate in the blood of patients with diabetes causes micro- and macrovascular complications by damaging mitochondria, the tiny power

plants within cells responsible for generating energy. When they are damaged they can leak electrons and make highly damaging free radicals.

Complications that can result when this happen include nephropathy (kidney disease), heart disease and retinopathy (which if left untreated can lead to blindness).

Resveratrol stops the damage by helping cells make protective enzymes to prevent the leakage of electrons and the production of toxic free radicals.

As well as being naturally present in grape skins, resveratrol is also present in seeds, peanuts and red wine.

Dr. Matt Whiteman, Principal Investigator and Senior Lecturer at the Institute of Biomedical and Clinical Science, Peninsula Medical School, commented: Resveratrol's antioxidant effects in the test tube are well documented but our research shows the link between high levels of glucose, its damaging effect on cell structure, and the ability of resveratrol to protect against and mend that damage.

He added: Resveratrol or related compounds could be used to block the damaging effect of glucose which in turn might fight the often life threatening complications that accompany diabetes. It could well be the basis of effective diet-based therapies for the prevention of vascular damage caused by hyperglycaemia in the future

## **Diabetes - Resveratrol may help prevent Blood Vessel Damage**

18th Mar 2008

Best syndication.com

Grapes contain a compound called resveratrol which has been researched and has been reported as an anti-aging and cancer preventing aid. New research published in the current issue of the science journal "Diabetes, Obesity and Metabolism" report that resveratrol may also help protect against damage to the blood vessels caused by high levels of blood glucose.

Elevated levels of glucose in the blood are associated with increased risk for retinopathy, nephropathy, and heart disease. Retinopathy can lead to blindness, while nephropathy can lead to kidney failure. The glucose causes damage to the mitochondria and this causes electrons to leak and create damaging 'free radical.'

That is where resveratrol can help by making protective enzymes that prevent the leakage of electrons and also halting the production of the harmful 'free radicals.'

Other sources besides grape skins are seeds, peanuts, and red wine.

The lead researcher Dr. Matt Whiteman, who is a Senior Lecturer at the Institute of Biomedical and Clinical Science, Peninsula Medical School concluded that this study showed how resveratrol's antioxidant benefits work with high glucose levels and how they protect against and mend damage that can occur to blood vessels.

Whiteman also believes that in the future resveratrol or similar compounds could be used as a therapy to prevent vascular damage caused by hyperglycemia.

## **Compound Found in Red Wine Could Reduce Hypertension in Postmenopausal Women, Study Finds**

20th Mar 2008

Wine spectator

Research from Spain performed on rats shows that polyphenols found naturally in red wine may keep blood vessels healthy in older, hypertensive women. Compounds found in red wine could potentially help ease hypertension in postmenopausal women, according to a study that will be published in the April 2008 issue of the medical journal *Hypertension*. Women who have gone through menopause are at a greater risk of hypertension than men of the same age, underlining the need to identify potential therapeutic measures, the study's authors wrote.

"The present findings may help to explain the potential benefit of red-wine polyphenols as a therapeutic agent for preventing menopausal vascular complications," the authors wrote, "especially in hypertensive women." The red-wine compounds, it was found, may help reduce hypertension as well as the complications associated with it, such as inflammation of the arteries, a restricted aorta or oxidative stress on the blood vessels.

The study was led by Rocío López-Sepúlveda, a researcher at the department of pharmacology at the University of Granada, who noted in the study text that previous research has found that red-wine polyphenols can offer protection against cardiovascular disease. One such polyphenol, resveratrol, has shown potential for possibly treating and preventing myriad disorders, such as cardiovascular diseases, pulmonary disorders and some forms of cancer. Other red-wine polyphenols may hold promise for fighting prostate cancer. But the compounds' effects on women's blood vessels was important to research, the study noted, because a woman's risk of hypertension before menopause is below that of a similarly aged man, but it can rise significantly after menopause.

The study, which also included research from the University Complutense of Madrid, used female rats that were genetically engineered to have high blood pressure. The researchers then stimulated menopause by removing the rats' ovaries, after which time the rats' blood pressure rose (due to their altered DNA). The scientists treated half the rats with a mixture of several types of red-wine chemicals associated with improved circulation, including resveratrol, for a period of five weeks. The remaining rats served as a control group, and received only water along with their diet.

After five weeks, the scientists examined the rats' blood vessels. They found that the high blood pressure had been alleviated in the rats that received a regular red-wine-compound treatment added to their food. The rats had more relaxed aortas, healthier linings to the veins and arteries, as well as less oxidative stress—all of which are associated with lower blood pressure.

The researchers noted that previous studies on red-wine compounds and their effects on estrogen-related disease risks did not involve mammals, reducing the applicability of the results to humans. This study, however, hoped to show that treating estrogen-deficient mammals with red-wine compounds could produce similar results. The use of genetically engineered rats with their ovaries removed, the study text states, is an established method of research that emulates women who have gone through menopause.

The scientists cautioned, however that while their results indicate that the risk of hypertension in postmenopausal women could potentially be reduced through the use of regular red-wine-chemical supplements, the results may not extend to women who drink red wine. Not only was red wine itself not used in the study, the authors noted that the exact mechanisms involved in red-wine polyphenols alleviating high blood pressure remain unclear, and require further study.

### **New study suggests compound in grape skins could help protect diabetics**

25th Mar 2008

Action News

A new study suggests a compound found in grape skins and, therefore, in red wine, could help protect diabetes patients from possible life-threatening complications.

Researchers in England found the compound, called resveratrol, may fix cell damage caused by high glucose levels in diabetics.

Excess glucose can cause kidney disease, heart disease and vision problems.

The antioxidant is most often found in grape skins and red wine, but is also in some seeds and peanuts.

### **Resveratrol Helps Kill Pancreatic Cancer Cells**

26th Mar 2008

Best Syndication.com

Researchers from New York say that resveratrol, a substance found in red wine, can help destroy pancreatic cancer cells and is even more effective when combined with other treatments. Scientists at the University of Rochester Medical Center say that the naturally occurring antioxidant cripples the cell's core energy source called the mitochondria.

How was the Study Performed?

This study involved taking pancreatic cancer cells and treating half with a 50 mg/ml dose of resveratrol, in combination with ionizing radiation. The scientists observed multiple benefits for treating pancreatic cancer.

Caused Sensitivity to Radiation

The cancer cells treated with resveratrol were more sensitive to the radiation. Lead author Paul Okunieff, M. D., chief of Radiation Oncology at the James P. Wilmot Cancer Center at the University of Rochester Medical Center says "We've discovered an important part of that equation. Resveratrol seems to have a therapeutic gain by making tumor cells more sensitive to radiation and making normal tissue less sensitive."

#### Caused Sensitivity to Chemotherapy

The resveratrol also lowered the function of proteins in the cancer cell membranes making them more sensitive to chemotherapy. The cancer cells had trouble pumping the chemotherapy back out through the membrane.

#### Promotes Cell Death

The antioxidant also triggered production of reactive oxygen species (ROS). The researchers measured apoptosis (cell death). The ROS has an oxidative effect on cells and they die.

#### Other Benefits to Resveratrol

Over the years scientists have discovered other benefits to the substance. In 1997 it was determined that a topical application of resveratrol helped prevent skin cancer. In 2003 it was discovered that resveratrol can extend the lifespan of yeast *Saccharomyces cerevisiae*. There have been numerous other studies highlighting the benefits of the antioxidant.

### **Red wine antioxidant may help destroy pancreatic cancer**

26th Mar 2008

Thaindian news

Researchers already know that a glass or two of red wine a day is good for the heart. Now, they've found that a naturally occurring antioxidant in grape and wine can help destroy pancreatic cancer cells.

Boffins at University of Rochester Medical Center have found that resveratrol, the natural antioxidant, can help destroy cancer cells by reaching and crippling the mitochondria, the cell's core energy source.

The study also showed that a combination of pre-treating cancer cells with resveratrol and then irradiating them induces apoptosis, a type of cell death important in cancer therapy.

Lead author Paul Okunieff, M.D., chief of Radiation Oncology at the James P. Wilmot Cancer Center at the University of Rochester Medical Center, said that the finding of a link between the antioxidant and the mitochondria was critical because, like the cell

nucleus, the mitochondria contains its own DNA and has the ability to continuously supply the cell with energy when functioning properly. Stopping the energy flow theoretically stops the cancer

“We’ve discovered an important part of that equation. Resveratrol seems to have a therapeutic gain by making tumor cells more sensitive to radiation and making normal tissue less sensitive,” he said.

As a part of the study the team divided pancreatic cancer cells into two groups: cells treated without resveratrol, or with resveratrol, at a relatively high dose of 50 mg/ml, in combination with ionizing radiation.

They then analysed the mitochondria function of the cells treated with resveratrol, and also measured apoptosis (cell death), the level of reactive oxygen species in the cells, and how the cell membranes responded to the antioxidant.

Their study showed that resveratrol not only lowered the function of proteins in the pancreatic cancer cell membranes that make the cells chemo-sensitive by pumping chemotherapy out of the cell, but that the antioxidant also triggered the production of reactive oxygen species (ROS), which are substances circulating in the human body that have been implicated in a number of diseases: when ROS is increased, cells burn out and die.

This in turn, caused apoptosis.

Other than this, the boffins also noted that resveratrol depolarized the mitochondrial membranes, which indicates a decrease in the cell’s potential to function.

Okunieff added that while additional studies are needed in this field, the current study indicates that resveratrol has a promising future as part of the treatment for cancer.

The study is published in the March edition of the journal, *Advances in Experimental Medicine and Biology*.

## **Mounting Evidence Shows Red Wine Antioxidant Kills Cancer**

27th Mar 2008

Science Daily

Rochester researchers showed for the first time that a natural antioxidant found in grape skins and red wine can help destroy pancreatic cancer cells by reaching to the cell's core energy source, or mitochondria, and crippling its function.

The new study also showed that when the pancreatic cancer cells were doubly assaulted - - pre-treated with the antioxidant, resveratrol, and irradiated -- the combination induced a type of cell death called apoptosis, an important goal of cancer therapy.

The research has many implications for patients, said lead author Paul Okunieff, M.D., chief of Radiation Oncology at the James P. Wilmot Cancer Center at the University of Rochester Medical Center. The study is published in the March edition of the journal, *Advances in Experimental Medicine and Biology*.

Although red wine consumption during chemotherapy or radiation treatment has not been well studied, it is not "contraindicated," Okunieff said. In other words, if a patient already drinks red wine moderately, most physicians would not tell the patient to give it up during treatment. Perhaps a better choice, Okunieff said, would be to drink as much red or purple grape juice as desired.

Yet despite widespread interest in antioxidants, some physicians are concerned antioxidants might end up protecting tumors. Okunieff's study showed there is little evidence to support that fear. In fact, the research suggests resveratrol not only reaches its intended target, injuring the nexus of malignant cells, but at the same time protects normal tissue from the harmful effects of radiation.

"Antioxidant research is very active and very seductive right now," Okunieff said. "The challenge lies in finding the right concentration and how it works inside the cell. In this case, we've discovered an important part of that equation. Resveratrol seems to have a therapeutic gain by making tumor cells more sensitive to radiation and making normal tissue less sensitive."

Resveratrol is known for its ability to protect plants from bacteria and fungi. Purified versions have been described in scientific journals as potential anti-cancer, anti-inflammatory and anti-atherogenic agents, and for their ability to modulate cell growth. Other well-known antioxidants derived from natural sources include caffeine, melatonin, flavonoids, polyphenols, and vitamins C and E.

A flurry of antioxidant studies in recent years has not proven how and why they work at the cellular level. At the suggestion of a young scientist in his lab, Okunieff began studying resveratrol as a tumor sensitizer. That's when they discovered its link to the mitochondria.

The discovery is critical because, like the cell nucleus, the mitochondria contains its own DNA and has the ability to continuously supply the cell with energy when functioning properly. Stopping the energy flow theoretically stops the cancer.

Researchers divided pancreatic cancer cells into two groups: cells treated without resveratrol, or with resveratrol, at a relatively high dose of 50 mg/ml, in combination with ionizing radiation. (The resveratrol concentration in red wine can be as high as 30 mg/ml, the study said, and higher doses are expected to be safe as long as a physician is monitoring.)

They evaluated the mitochondria function of the cells treated with resveratrol, and also measured apoptosis (cell death), the level of reactive oxygen species in the cells, and how the cell membranes responded to the antioxidant.

Laboratory experiments showed that resveratrol:

- \* Reduced the function of proteins in the pancreatic cancer cell membranes that are responsible for pumping chemotherapy out of the cell, making the cells chemo-sensitive.
- \* Triggered the production of reactive oxygen species (ROS), which are substances circulating in the human body that have been implicated in a number of diseases: when ROS is increased, cells burn out and die.
- \* Caused apoptosis, which is likely the result of increased ROS.
- \* Depolarized the mitochondrial membranes, which indicates a decrease in the cell's potential to function. Radiation alone does not injure the mitochondrial membrane as much.

The team also wanted to investigate why pancreatic cancer cells seem to be particularly resistant to chemotherapy. The pancreas, a gland located deep in the abdomen, produces insulin and regulates sugar, and pumps or channels powerful digestive enzymes into the duodenum. This natural pumping process, however, ends up ridding the needed chemotherapy from cells in the pancreas. But just as resveratrol interferes with the cancer cells' energy source, it also may decrease the power available to pump chemotherapy out of the cell.

"While additional studies are needed," Okunieff said, "this research indicates that resveratrol has a promising future as part of the treatment for cancer."

In the same journal, Okunieff and his group also reviewed why resveratrol protects normal tissue, and found that antioxidants can be designed to take advantage of certain biochemical properties or cellular targets, making them more effective.

## **Red wine's new cancer boost**

28th Mar 2008

FT.com

The much-publicised idea that red wine can protect against cancer is given a boost this week through research that provides the notion with more scientific underpinning.

Researchers at the University of Rochester have shown for the first time that resveratrol, a natural antioxidant found in grape skins and red wine, helps to destroy cancerous pancreatic cells by crippling the diseased cells' mitochondria, the minute organelles found in the majority of living cells which provide them with energy.

The Rochester researchers found that resveratrol made tumour cells more sensitive to cancer-destroying radiation while rendering healthy cells less susceptible. Published in this month's *Advances in Experimental Medicine and Biology*, their work suggests that a

combination of red wine and conventional radiation or chemotherapy can be effective in killing cancer cells by crippling their mitochondria and so cutting off the cells' supply of energy.

Paul Okunieff, head of radiation oncology at the university's medical centre, said that although red wine consumption during conventional treatment had not been well studied it was not prohibited. He suggested the best approach was to let the patient drink as much red wine or purple grape juice as they wanted.

## **Live to 150, Can You Do It?**

1st April 2008

abc News

Take a guess. How many people are at least 100 years old in the United States? Would you believe more than 84,000 and climbing at an astonishing rate? By the time America's baby boomers reach that milestone, there could be more than a million centenarians. My new special, "Live to Be 150 ... Can You Do It?" takes you way beyond nips and tucks, Botox and exercise, but rather to the cutting edge of the search for a longer, healthy life.

What you will see could not have happened just a few years ago. Whether you're 20, 40 or 60 years old, living well past 100 could actually be possible.

Over the last two years, I have talked to some of the world's top scientists, who told me about cutting edge breakthroughs in our understanding of how the body ages.

And they showed me how they are already growing human body parts in the lab for implantation into people. The heart research lab at the University of Minnesota took just a few days to grow a living, beating rat heart from stem cells. Amazing.

I also spoke with two scientists in Boston who say that in the next five years, they plan to have a drug on the market that will treat several of the major diseases of aging. This drug is based on the "good stuff" in red wine called resveratrol.

I also dined with a group of calorie restrictors. They weigh and measure every morsel of food they put in their bodies -- and consume 30 percent fewer calories than the average American. These calorie restrictors claim they have incredible energy and improved eyesight and memory. Experts say this is the only proven way to extend life.

And if you are feeling a little apprehension about living longer and longer, don't worry. I met a group of people who have all reached the age of at least 100. And it's not just lucky genes because genes account for only 25 percent of how long we live.

So at 100, could you still drive? Will romance be more than just a sweet memory? The stories of these remarkable centenarians will inspire you and just might calm your fears about getting old.

The special also explores secrets to aging gracefully and living life to its fullest, from the 83-year-old actor turned race car driver Paul Newman, and Carmen, the oldest working fashion model.

And what about the implications of a longer life? Can you imagine being married to the same person for 100 years? Well, if we live much longer than a century, our relationships, our spending habits, our retirement plans are bound to undergo sweeping changes. I asked the "Freakonomics" author, Stephen Dubner, if it will ever be cool to be old.

This is what he said: "I'll say that there will come a time when being old is cooler than being young, because what being old will represent is power, it will represent money. It will represent having survived. It will represent wisdom. You know it's a prediction I'd like to make."

On that optimistic note, and with the hope that we're all going to be around for many years to come, I wish you a long, healthy life.

## **Grape skin compound (resveratrol) fights the complications of diabetes**

8th April 2008

ProHealth

Resveratrol could stop diabetic complications such as heart disease, retinopathy and nephropathy, research finds.

Research carried out by scientists at the Peninsula Medical School in the South West of England has found that resveratrol, a compound present naturally in grape skin, can protect against the cellular damage to blood vessels caused by high production of glucose in diabetes. This is according to a paper published in the April 2008 issue of the journal *Diabetes, Obesity and Metabolism*. ["Resveratrol blocks high glucose-induced mitochondrial reactive oxygen species production..."]

### Elevated Glucose Damages Cellular Power Generators

The elevated levels of glucose that circulate in the blood of patients with diabetes causes micro- and macrovascular complications by damaging mitochondria, the tiny power plants within cells responsible for generating energy. When they are damaged they can leak electrons and make highly damaging 'free radicals'. Complications that can result when this happens include nephropathy (kidney disease), heart disease and retinopathy (which if left untreated can lead to blindness).

### Resveratrol Helps Cells Protect Themselves

Resveratrol stops the damage by helping cells make protective enzymes to prevent the leakage of electrons and the production of toxic 'free radicals'. As well as being naturally present in grape skins, resveratrol is also present in seeds, peanuts and red wine.

Dr. Matt Whiteman, Principal Investigator and Senior Lecturer at the Institute of Biomedical and Clinical Science, Peninsula Medical School, commented: “Resveratrol’s antioxidant effects in the test tube are well documented but our research shows the link between high levels of glucose, its damaging effect on cell structure, and the ability of resveratrol to protect against and mend that damage.”

He added: “Resveratrol or related compounds could be used to block the damaging effect of glucose which in turn might fight the often life threatening complications that accompany diabetes. It could well be the basis of effective diet-based therapies for the prevention of vascular damage caused by hyperglycaemia in the future.”

## **Drinking Wine Comes With Some Grape Expectations**

11th April 2008

Daily Nexus

Healthy vice. Oxymoron? By the strict definition, it most assuredly is. However, with a change in perspective, something once viewed as a vice could theoretically be viewed later as something healthy. There could also be conditions for it to be considered healthy in moderation. It certainly exists, and, while we’re at it, let’s throw another attractive word on there. It’s a healthy and romantic vice. It’s associated with festivity and love. France produces more of it than anywhere else. If you haven’t guessed it already, I am talking about wine.

Some say we started producing wine as far back as 7000 B.C. Its origin has been traced to Greece by some, China by others and still many others who understandably want to claim credit for its creation. Like beer before it, wine was often consumed to avoid water that was easily polluted. With the natural sanitation afforded by alcohol, wine slowly became ubiquitous in places where people could grow grapes. The question health experts pose today is whether humans were meant to consume alcohol. Much like humans did not always drink milk, but evolved to be able to do so, some argue humans were absolutely meant to drink alcohol.

By now most of you have unquestionably heard that wine is good for you. Wine is often credited as the root of the so-called French paradox - the French eat a high-fat diet, but have much lower incidences of heart disease than we diet-obsessed Americans. However, the French paradox is much too complicated to be attributed solely to the potency of a glass of Cabernet.

Moderate consumption of red wine has been linked to lower incidences of heart disease, cancer and stroke, to name just a few. More importantly, drinking red wine seems to lengthen your life. I think moderate deserves some definition, though, considering the tendencies of students - especially on this campus. “Moderate” means one to two glasses for men and one for women. The health advantages quickly dissipate and transform into the typical pernicious effects of alcohol consumption when two glasses turns into five.

Scientists have long suspected these seemingly miraculous effects are due to an antioxidant known as resveratrol, which is found naturally in grapes and thus, wine. Scientists at Harvard Medical School and the National Institute on Aging conducted a study at the end of 2006 in which they fed two groups of rats a diet made up of 60 percent fat - about 30 percent higher than it should be. They gave extremely high doses of resveratrol to one of the groups. While both rats grew equally fat, the rats without the resveratrol all exhibited signs of diabetes and had enlarged livers. The rats with the resveratrol exhibited no such signs. In fact, they lived many months longer than the other group of rats, and about as long as rats on a normal, healthy diet. In human terms, imagine eating boatloads of cheese and butter and living as long as the neighborhood vegan.

However, the applicability of such a study to humans is far from clear. For one, to consume the amount of resveratrol that was fed to the rats, one would have to drink about 1,000 bottles of red wine a day. Secondly, humans are much more complicated beings than mice, so even if resveratrol supplements were deemed healthy, there is no telling what their effects might be. Many vitamins consumed in excess can be deadly.

There are some who suggest we simply consume grape juice and avoid the potential ill effects of alcohol. Grapes and red wine have equally high levels of resveratrol, but I think our experience with vitamins has shown that simply attributing the benefits of red wine to a lone antioxidant would be foolish. Taking vitamin supplements cannot replace eating fruits and vegetables. Nobody can argue taking a supplement of Vitamin C is the same as eating an orange. That is because we still do not truly understand the essence of an orange.

For now, let the scientists do their work. Epidemiologic studies have consistently shown people who consume wine live longer lives. Who really knows why? All I can say is try and consume moderate amounts of wine every day, ideally with a meal. If that means waiting until you're out of college, so be it.

## **Scientists Move to Harness Red Wine Compound's Power**

28th April 2008

Wine Spectator

Research focuses on resveratrol's ability to damage bad cells and help others  
Two separate teams of researchers, one on each side of the Atlantic, believe that the red wine compound resveratrol may have the ability to treat cells associated with diseases. Scientists at the University of Rochester in New York found that the compound deactivates the mitochondria of pancreatic cancer cells, making chemotherapy more effective, while a team at Newcastle University in England is studying resveratrol as a treatment for a mitochondrial-related illness.

Resveratrol is an antioxidant compound found in many sources, such as nuts, berries and the skins and seeds of grapes, where it acts as a defender against foreign invaders like mold and fungus. The compound is also found in wine, especially red wine, due to the

exposure of the fermenting juice to skins. Previous studies have shown that resveratrol bolsters healthy cells by stimulating mitochondria, the organelle that provides power for a cell's operations.

For the Rochester study, published in the March issue of *Advances in Experimental Medicine and Biology*, the research team wanted to examine if resveratrol had a negative effect on cancer cells. In this case, they chose pancreatic cancer cells. Pancreatic cancer is particularly hard to treat with chemotherapy, because the pancreas, a gland located deep in the abdomen, pumps powerful digestive enzymes into the intestines. The pancreatic cells protect themselves from these enzymes by rapidly pumping out toxic materials, including chemotherapy, making treatment difficult.

The team, lead by Dr. Paul Okunieff, the chief of radiation oncology at the University's cancer center, prepared two sets of pancreatic cancer cells and added pure resveratrol to one. After treating both sets with chemotherapy, they found that the resveratrol had "depolarized" the cell membranes of 35 percent of the mitochondria, shutting down the organelles and exposing the cells to radiation treatment. In the sample without resveratrol, the mitochondria were not greatly damaged. Moreover, the resveratrol reduced the function of proteins in the cells that pump the chemo out. The scientists speculate that the red wine compound may be more effective at higher doses.

"While additional studies are needed, the research indicates that resveratrol has a promising future as part of the treatment for cancer," said Okunieff. The study added that chemotherapy patients, who are normally advised not to consume alcohol, should not be automatically advised against drinking red wine. However, whether or not the lab results translate to the beverage remain unclear.

"The challenge lies in finding the right concentration [of resveratrol] and how it works in the cell. In this case, we've discovered an important part of that equation," Okunieff added. "Antioxidant research is very active and very seductive right now."

Indeed, the U.S. Food and Drug Administration has designated a lab-produced form of resveratrol, made by Sirtris Pharmaceuticals in Massachusetts, an "orphan-drug," a preliminary status granted to drugs being developed as possible treatment for a disease affecting fewer than 200,000 Americans.

Sirtris is supplying their resveratrol, called SRT501, to a team of scientists at England's Newcastle University to conduct clinical trials on ailments related to a mitochondrial-related illness, called MELAS—mitochondrial myopathy, encephalopathy, lactic acidosis, strokelike episodes. MELAS is caused by mutated mitochondria and is a progressive and fatal disease that normally surfaces when the patient is between five and 15 years old. Strokelike episodes may lead to impaired muscular function and dementia.

The disease may not affect as many people as heart disease and cancer, but "MELAS can have a devastating effect on the quality of life of patients and their families," said Patrick Chinnery, who will head the upcoming resveratrol-based MELAS trial.

Chinnery's team will study if resveratrol can improve the functioning of the mitochondria and hopefully diminish the symptoms. If the research is successful, the FDA will then consider approving SRT501, with Sirtris as the sole marketer, for a seven-year period. "Many diseases of aging, such as type 2 diabetes, exhibit impaired mitochondrial function," said Peter Elliot, vice president of development at Sirtris. "We hope to develop new therapies."

Resveratrol seems so promising that British pharmaceutical giant GlaxoSmithKline announced on April 23 that it would buy Sirtris for \$720 million. Moncef Slaoui, chairman of Glaxo's research and development arm, said Sirtris had "potentially transformative science," in a statement on the sale.

## **Understanding Red Wine's Potential Benefit for Diabetes**

30th April 2008

Business Wire

ORLANDO, Fla.--(BUSINESS WIRE)--New research suggests that resveratrol, a chemical commonly found in red wine, has the ability to lower blood sugar levels, but might have certain untoward side effects. This research will be presented at the American Association of Clinical Endocrinologists (AACE) 17th Annual Meeting & Clinical Congress by Kimberly Martin, MD, and mentor, Dr. F. Ismail-Beigi, on Friday, May 16th, at the Walt Disney World Dolphin Resort in Orlando.

Resveratrol is a naturally occurring chemical found in grapes that has been reported to have cardioprotective, anti-inflammatory, anti-viral, and glucose-lowering properties. The effect of resveratrol on lowering blood glucose in diabetic rats has been reported by several investigators in the past.

Their results have shown that resveratrol improves glycemia by stimulating glucose transport in certain tissues including the skeletal muscle that expresses the insulin-sensitive Glut4 isoform of glucose transporters. However, the research by Drs. Martin and Ismail-Beigi shows that in cells expressing the Glut1 isoform, resveratrol blocks glucose transport by binding and inhibiting the Glut1 transporter. This may be of importance because certain cells and tissues, including brain, retina, placenta, and red blood cells express large amounts of this transporter. Hence, the presumed inhibition of the Glut1 transporter in these tissues in-vivo may have undesired and negative effects on their normal function.

"It's exciting to see resveratrol's glucose-lowering effect in diabetic experimental animals," Dr. Martin said. "However, studies are currently underway in our laboratory to determine whether the agent inhibits glucose transport in the brain of normal and diabetic animals."

At the 2008 AACE Annual Meeting, diabetes will be taking center stage. A special symposium titled "Clinical Trials Targeting Glycemia: What Do We Expect to Learn?"

will consider the impact of glucose control through studies including ACCORD, ADVANCE, VADT, and others. Other sessions of interest include “Insulin Resistance and Atherosclerosis: The Missing Link,” “Diabetes: A Cardiac Condition,” and “Hypoglycemia: The Limiting Factor in the Glycemic Management of Diabetes.”

## **Red wine may help fight diabetes**

1st May 2008

Economic Times

WASHINGTON: Here's another reason for you to indulge in that glass of red wine - resveratrol, a chemical commonly found in it has the ability to lower blood sugar levels.

However, the research also warns that resveratrol might have certain untoward side effects.

Resveratrol is a naturally occurring chemical found in grapes that has been reported to have cardioprotective, anti-inflammatory, anti-viral, and glucose-lowering properties.

The effect of resveratrol on lowering blood glucose in diabetic rats has been reported by several investigators in the past.

Their results have shown that resveratrol improves glycemia by stimulating glucose transport in certain tissues including the skeletal muscle that expresses the insulin-sensitive Glut4 isoform of glucose transporters.

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"It's exciting to see resveratrol's glucose-lowering effect in diabetic experimental animals. However, studies are currently underway in our laboratory to determine whether the agent inhibits glucose transport in the brain of normal and diabetic animals," said Dr Martin.

The research will be presented at the American Association of Clinical Endocrinologists (AACE) 17th Annual Meeting & Clinical Congress on May 16th, at the Walt Disney World Dolphin Resort in Orlando.

## Supplement Shown To Extend Life In Animal Studies

17th May 2008

cbs4denver.com

DENVER (CBS4) —Visit the supplement aisles of your local vitamin store and you'll find loads of products with all kinds of claims, but there's one that's raising eyebrows: Resveratrol.

"Oh it's very incredible," said one man already taking it. It was news to one woman. "And I thought I knew about them all."

Resveratrol has been a sleeper to a lot of people, but positive data just seems to keep coming.

Consider this: Pharmaceutical giant GlaxoSmithKline last month offered over \$700 million for all of the outstanding shares of a startup company called Sirtris.

Sirtris has been working with resveratrol, a chemical found in red wine, that shows an effect on the aging process. Sirtris has developed what it says is a more powerful version that it is testing on diabetes patients.

Resveratrol seems to turn on an enzyme called, sirtuin 1 that can slow down the aging process. The enzyme is found in various forms in life as varied as yeast, worms, mice ... and people.

Studies showing whether human life is actually lengthened would take decades, but in every living being tested so far, it does. Many experts are already taking it, noting that resveratrol is well tolerated.

"There's no doubt, if you feed an animal this stuff, they're going to get less cancer," says Dr. Robert Sclafani, Chair of the Biochemistry and Molecular Biology Department at CU Denver.

It started when scientists isolated it in the skin of grapes. It's also in peanuts.

Sclafani is hoping for funding to further his studies of how resveratrol acts on cancer cells.

Initial research done at CU Denver shows resveratrol has an effect on human cancer cell lines.

"What resveratrol does, as we found in our studies, it activates a system that's present in cells but only activates it in cancer cells, not in normal cells ... What it does is it fools the cell into thinking that its DNA is being damaged," says Sclafani, "And then it turns on a response mechanism that now the cell does not divide anymore."

He believes it may have a future use accompanying radiation or chemotherapy treatments.

Sclafani thinks the resveratrol may make the cells more sensitive to radiation or chemo. That might mean that doses of radiation or chemo might be reduced.

It's not a treatment by itself, Sclafani believes, but if human studies bear out what it's doing in other living beings it looks to be an effective cancer preventative.

"Now one of the things we'd like to know is what the connection is between this anti-cancer property and the anti-aging."

But researchers don't know. They do know it seems to have an effect. The fact of the matter is, the only thing proven to extend life is a low-calorie diet.

The encouraging thing is that it motivates sirtuin to go active and do all the good things it does, which is what resveratrol has been shown to do in animal studies.

Since the enzyme is virtually the same in humans, Sclafani thinks there's good reason to believe the properties would be the same in humans.

But no one knows what doses might be most effective on humans and for how long the effects will last. It will take years of research.

In the meantime, researchers like Sclafani says check with your doctor if you're under treatment for any medical condition before taking any supplement. But he's taking it. And it's all part of what may be a science of anti-aging that's just developing.

### **A little wine can be beneficial to liver, UCSD research finds**

22nd May 2008

SignOnDiego.com

Alcohol and your liver: not a happy couple, right?

Well, not exactly. A new UCSD study challenges conventional wisdom by suggesting one small glass of wine a day can reduce the risk of early-stage liver disease by one-half compared with drinking no alcohol.

People who drank beer or hard liquor, though, had more than four times the odds of getting fatty liver disease.

"This is a whole paradigm shift in our way of thinking about this disease," said Dr. Jeffrey Schwimmer, a UCSD liver disease expert who admits to drinking more wine now – preferably red – than before he conducted this study.

Moderate wine drinking previously has been linked with protecting the heart. Now, Schwimmer said, “if one is going to use alcohol in a modest fashion for heart protection, this study suggests wine is not only safe for the liver, but may in fact be beneficial.”

Schwimmer's study does not explain exactly how wine protects the liver, but he suggested in an interview that the benefit might come from an ingredient in wine called resveratrol, or from a process related to the fermentation of grapes.

His report is published in the current issue of the journal *Hepatology* and was funded by divisions of the National Institutes of Health.

The condition Schwimmer studies is called non-alcoholic fatty liver disease, a condition found in 20 percent of adults, even those who drink little alcohol. The condition has no symptoms, but can be diagnosed when the liver has around 5 percent abnormal fat deposits. The normal amount is 1 percent.

In a quarter of those with fatty liver disease, the condition worsens to hepatitis or liver inflammation. And in 10 to 20 percent of those with hepatitis, scarring associated with cirrhosis occurs.

Before one rushes to the discount wine store, the study has several caveats. For starters, one must limit consumption to only 4 ounces a day, a little more than two shots' worth.

Second, people who already have liver disease should avoid alcohol at all costs.

Third, the study does not suggest that drinking more than 4 ounces further reduces the chance of liver disease. In fact, for most people, drinking more alcohol could raise the risk of other illnesses, such as cirrhosis of the liver and heart disease.

Schwimmer's study also is vulnerable to reporting error. It was based on examination of answers given to researchers between 1988 and 1994 by 15,000 adult Americans who had undergone a liver enzyme blood test called ALT.

ALT is not as accurate as liver biopsies in diagnosing fat in the liver, he acknowledged.

“Now we need to take the next step,” Schwimmer said. He plans to study people who have more symptomatic liver disease, including hepatitis or cirrhosis, not linked to heavy use of alcohol.

## **Red wine keeps liver healthy, suggests new study**

22nd may 2008

Nutraingredients.com

Fresh evidence that supports the potential protective health properties of wine with a US study suggesting a glass of red wine a day could actually protect against liver disease.

People who drank up to one glass of wine a day saw the risk of liver disease due to Non-Alcoholic Fatty Liver Disease (NAFLD) cut in half, report researchers at California university's San Diego School of Medicine, who carried out a study of nearly 12,000 individuals.

NAFLD, almost unknown over two decades ago, is the most common liver disease in the US. Affecting over 40 million adults in the US alone, its prevalence is expected to grow worldwide as nations become increasingly obese.

Previous research has linked the potential health benefits of wine to resveratrol, a powerful polyphenol and anti-fungal chemical that occurs naturally under the skin of red wine grapes.

It is often touted as the bioactive compound in grapes and red wine, and has particularly been associated with the so-called 'French Paradox', a phrase used to describe the low incidence of heart disease and obesity among the French, despite their relatively high-fat diet and levels of wine consumption.

But recommendations for modest alcohol consumption in individuals at risk for cardiovascular disease have overlooked the fact that these same people are also at an increased risk for NAFLD, state the San Diego researchers.

The Californian scientists set out to investigate whether modest alcohol consumption for the heart is safe with regards to the liver.

Their findings suggest "a paradigm shift", in that a daily tippie of one's favourite red may not only be safe for the liver but could actually decrease the prevalence of NAFLD.

"The odds of having suspected NAFLD based upon abnormal liver blood tests was reduced by 50 per cent in individuals who drank one glass of wine a day," said Jeffrey Schwimmer, associate professor of gastroenterology, hepatology and nutrition, Department of Pediatrics, UC San Diego School of Medicine and Director, Fatty Liver Clinic at Rady Children's Hospital San Diego.

The result remained constant, even after adjusting for age, sex, race, education, income, diet, physical activity, body mass index, and other markers of health status, the researchers report in the June 2008 issue of Hepatology.

In contrast, compared with wine drinkers, people who reported modest consumption of beer or spirits had over four times the odds of having suspected NAFLD.

The protective properties of compounds found in red wine are the focus of numerous studies today as industry and academia investigate dietary mechanisms to stem the growing tide of diseases such as obesity, heart disease and diabetes.

A recent study in California, for example, found low doses of freeze-dried grape powder could inhibit the development of colorectal cancer thanks to the polyphenol resveratrol and synergistic effects between the grape compounds.

Previous studies have also linked resveratrol to bearing a positive effect on extending survival rates of mice and preventing the negative effects of high-calorie diets. It has also been linked to diabetes, heart health and obesity.

In red wine, the amount of resveratrol in a bottle can vary between types of grapes and growing seasons, and can vary between 0.2 and 5.8 milligrams per litre. But nearly all dark red wines - merlot, cabernet, zinfandel, shiraz and pinot noir - contain resveratrol.

As the evidence stacks up to support the positive message behind polyphenols fresh market opportunities are opening up. Frost & Sullivan estimates that there is significant potential for growth in polyphenol use as health ingredients.

Revenues for the overall European polyphenols market in 2003 were thought to be worth \$99 million (€77.88m), with red fruit anthocyanins, leading market expansion alongside green tea flavonoids, and grape and olive polyphenols.

The cross-sectional, population-based study of nearly 12,000 participants in the National Health and Nutrition Examination Survey (NHANES), an epidemiological survey conducted by the Centers for Disease Control and Prevention (CDC), included 7,211 non-drinkers and 4,543 modest alcohol drinkers.

The scientists warned that "because this effect was only seen with wine, not in beer or liquor, further studies will be needed to determine whether the benefits seen were due to the alcohol or non-alcohol components of wine."

The study was funded in part with grants from the National Institutes of Health National Research Service Award (NIH NRSA) and from the National Center for Research Resources of the National Institutes of Health for the General Clinical Research Center at UC San Diego.

## **Researchers See Great Potential for Red Wine Patch**

28th May 2008

wine Spectator

A team of researchers at Chang Gung university in Taiwan say the best way to get an effective dose of the red wine compound resveratrol may not be through the mouth (to wine drinkers' chagrin) but rather through the skin. The scientists found that the most effective way to transmit resveratrol to the body is via a patch, according to experiments performed on mice.

Resveratrol is a potent phenolic compound found in the seeds and skins of grapes. Red wine is an abundant source of the chemical because of the extended contact between the

juice and must during the winemaking process. More recently, the compound is being studied for its beneficial effects on the mitochondria of cells. Resveratrol also shows potential for treating and preventing various skin conditions, such as sunburns and melanoma.

The latter ability is what lured researchers at the Taiwanese university to conduct their study, the results of which were published in the May issue of the *Biological & Pharmaceutical Bulletin*. They confirm the skin benefits of resveratrol and cast doubt on the effectiveness of taking oral doses of the red wine compound.

Since the compound "is extensively metabolized in the body," researchers would have to up the amount given orally to mice into what would equal hundreds of bottles of wine per day for a human. Even if such high amounts were effectively compressed into a red wine-based pill, the study reports, the compound would be pricey as "this would require 2.7kg (5.95lbs) of resveratrol a year at a current cost of circa \$6,800." Metabolism of the compound is slower on the skin, however, compared to the stomach, and the researchers observed that the half-life of resveratrol is longer and the chemical stronger when absorbed on the outside.

The scientists gathered a group of female nude mice—a mutant type of mice that have no fur. They prepared various types of skin patches with resveratrol, as well its derivative, piceatannol, a known anti-inflammatory, in order to test effectiveness. They also worked with various pH levels in order to find optimal "permeation" of the skin.

The scientists placed various oil- or glycerol-based solutions, dispensing either resveratrol or piceatannol, onto the skin of the mice and monitored the patches' ability to permeate for 12 hours. They found some promising results, but believe the best method is to use a resveratrol-based hydrogel patch, which uses water-based dispersion, at a pH of 8.0, which saw the highest concentration of the red wine chemical spreading onto the skin.

The scientists also noted that skin irritation with hydrogel patches is minimal and the patches tend to stick to the skin well, even in areas of high movement. They conclude that "delivery via a skin route may be a potent way to achieve the therapeutic benefits of resveratrol."

Lead author Jia-You Fang, a researcher at the university's pharmaceutical lab, said that this is just the beginning for resveratrol skin research. Future products, he added, may not be limited to patches, but could be extended to resveratrol-based sunscreens, for example.

According to Fang, the next stage involves more tinkering with the pH levels and amounts of resveratrol used on the hydrogels as "the different formulation for resveratrol largely affects the permeation into or across the skin," he said.

"Moreover, resveratrol retained within the skin after topical application can be an efficient way to be a therapy or prevention of UV exposure and skin carcinogenesis," the report read. "Further study is needed, of course, to confirm these efficiencies."

## **Fountain of Youth Drugs Are Coming, And Soon**

2nd June 2008

Gizmodo

If you need proof that anti-aging drugs are going to be serious business, you only have to look at today's purchase of Sirtris, a pharmaceutical company dedicated to researching the anti-aging benefits of restricted-calorie diets, by GlaxoSmithKline. The price of the purchase? \$720 million. And they plan to make all of that money back and a whole lot more by selling you pills to make you live to 120.

Five years ago, Sirtris president and Harvard professor David Sinclair discovered the molecule resveratrol, which targets the gene activated by restricted calorie diets and extends lifespans. Now, after research has been done on monkeys and other assorted animals, it's nearly time for clinical testing on humans.

The effects of the coming drugs won't be to extend your feeble old age so you're old and helpless for longer. Instead, they'll slow the aging process down completely.

And with every major pharmaceutical company currently pouring money into researching these genes and drugs, the competition is going to be fierce once they hit the market. As Sinclair says, "It'll be on the market as a diabetes drug. It'll have to sell for \$3 or \$4 a pill, in order to stay competitive. And once it goes off-patent, companies will be able to make it for pennies. It'll be like aspirin."

## **Resveratrol Known To Counteract Aging**

4th June 2008

the medguru

Experts are studying a chemical called Resveratrol, found in red wine, said to benefit health and counteract aging.

Ongoing studies suggest that medical breakthroughs in later stages of research can find key to an extended life and cancel out aging effects.

"The general public has no idea what's coming," said David Sinclair, a Harvard Medical School professor who is researching health benefits of resveratrol. Addressing a panel of aging experts, Sinclair confirmed that tests on lab animals proved increased longevity and better health. He declared that drugs will be soon introduced for people.

"It's not an if, but a when," said Sinclair, who co-founded Sirtris Pharmaceuticals to practice such drugs.

Sinclair claimed that the treatments will be entering medical arena soon and that it is no more a science fiction or a next generation issue now. According to him, the treatments are just a few years away from now.

Aging, aging well and staying fit, is progressively a most discussed issue as the people grow older.

Robert Butler, a pioneer of aging research who also won the Pulitzer Prize in 1976 for his paperback "Why Survive? Being Old in America," said that medicine and biology are important for longevity but social integration plays an important role too.

Richard Weindruch, a professor at University of Wisconsin and director of LifeGen Technologies is studying effects of low-calorie diets on aging.

Weindruch has researched successfully that planned and restricted diet can increase the life spans of mice and monkeys that can live up to 40 years. He hopes to publish his findings soon.

His research found that mice given hefty dose of resveratrol "live longer, they're almost immune to the effects of obesity. They don't get diabetes, cancerdefine, Alzheimer's as frequently and delay the diseases of aging."

Sinclair proved this with a video of mice taking resveratrol running on a treadmill more energetically than those who take it. A large dose is equivalent to 1,000 bottles of red wine.

The inference of his study for humans is uncertain, the but dietary supplements containing resveratrol are selling fast. Some experts raised safety concerns on resveratrol intake too.

## **Is Red Wine the Fountain of Youth?**

6th June 2008

CBN News

Scientists have studied the health benefits of red wine for years. It contains something called resveratrol that could add years to your life.

They've recently learned that it takes much less resveratrol than they thought to reap the benefits.

The Key to Long Life?

After the great flood recorded in the Bible, Noah planted vineyards. He lived 900 years -- could there be a connection between long life and the ingredients in wine?

David Sinclair from Harvard Medical School has been studying resveratrol, an ingredient in red wine that shows amazing anti-aging properties.

"I think it's going to be the molecule of the 21st century. There are many studies out there that it can slow down cancer, prevent cancer, prevent osteoporosis. It's like a miracle molecule," he said.

Now, Sinclair is releasing new research and the results are astonishing.

Mice that were fed a high calorie, high fat diet with resveratrol became resistant to diabetes, heart disease and liver damage.

What About 'Quality' of Life?

Many people wouldn't want to live longer if it meant living in disability. But the mice on resveratrol actually gained balance and coordination as they aged.

"It's making the cell repair its DNA and stop the genes from being re-arranged -- and that allows for longer life," Sinclair said.

Sinclair is no fan of wine, so he gets resveratrol from capsules that preserve the fragile substance.

He said, "We... figured out what the optimal dose will be in a capsule and it approximates to a few glasses of red wine a day without the alcohol."

What may it mean? That resveratrol now or a future resveratrol-like drug could produce longer lives -- in good health. And a healthy lifestyle could enhance both of those.

## **Red Wine Acts Like Low-Calorie Diet**

6th June 2008

NBC6

Red wine may explain why some people can eat a diet loaded with saturated fats and still have a healthy heart, researchers said.

A study from the University of Wisconsin-Madison suggests that resveratrol, which is found in grapes, pomegranates and other foods, may be the key. The work was based on studies of mice; results in animals sometimes do not translate to people.

In the journal Public Library of Science One, the researchers said that low doses of resveratrol mimic the effects of what is known as caloric restriction -- diets with 20 to 30 percent fewer calories than a typical diet. Other studies have shown those diets can extend lifespan and slow aging.

Senior author Richard Weindruch said the study shows benefits to resveratrol in doses that people can easily eat or drink. Sometimes, reports of benefits from a certain food require amounts that are hundreds of times higher than someone could get in their diet.

Previous research has shown that resveratrol in high doses extends lifespan in invertebrates and prevents early death in mice given a high-fat diet, a news release said.

The new study showed that low doses beginning in middle age can get many of the same benefits.

"Resveratrol is active in much lower doses than previously thought and mimics a significant fraction of the profile of caloric restriction at the gene expression level," said another author, Tomas Prolla.

In short, a glass of wine or food or supplements that contain even small doses of resveratrol are likely to represent "a robust intervention in the retardation of cardiac aging," the authors said.

## **Resveratrol Alters Gene Expression Similar To Calorie Restriction**

7th June 2008

FuturePundit

A report in Plos One finds that in mice resveratrol causes a change in gene expression patterns very similar to that seen with calorie restriction diets. Resveratrol might extend life just as calorie restriction does without the need to feel constant hunger or to look gaunt.

Resveratrol in high doses has been shown to extend lifespan in some studies in invertebrates and to prevent early mortality in mice fed a high-fat diet. We fed mice from middle age (14-months) to old age (30-months) either a control diet, a low dose of resveratrol (4.9 mg kg<sup>-1</sup> day<sup>-1</sup>), or a calorie restricted (CR) diet and examined genome-wide transcriptional profiles. We report a striking transcriptional overlap of CR and resveratrol in heart, skeletal muscle and brain. Both dietary interventions inhibit gene expression profiles associated with cardiac and skeletal muscle aging, and prevent age-related cardiac dysfunction. Dietary resveratrol also mimics the effects of CR in insulin mediated glucose uptake in muscle. Gene expression profiling suggests that both CR and resveratrol may retard some aspects of aging through alterations in chromatin structure and transcription. Resveratrol, at doses that can be readily achieved in humans, fulfills the definition of a dietary compound that mimics some aspects of CR.

Biogerontology theorist Aubrey de Grey does not expect calorie restriction (CR) or drugs that mimic calorie restriction to boost human longevity by the same percentage amount that they do in mice. Aubrey expects maybe a year or two extra life from a human as a result of CR. If Aubrey is correct then resveratrol might extend life but not by a decade. However, we still do not know whether resveratrol will lower all cause mortality in humans.

Some of the researchers involved in this effort think this result is important because the dose of resveratrol used is low and makes human use of resveratrol more practical.

"This brings down the dose of resveratrol toward the consumption reality mode," says senior author Richard Weindruch, a University of Wisconsin-Madison professor of medicine and a researcher at the William S. Middleton Memorial Veterans Hospital. "At the same time, it plugs into the biology of caloric restriction."

Previous research has shown that resveratrol in high doses extends lifespan in invertebrates and prevents early mortality in mice given a high-fat diet. The new study, conducted by researchers from academia and industry, extends those findings, showing that resveratrol in low doses and beginning in middle age can elicit many of the same benefits as a reduced-calorie diet.

"Resveratrol is active in much lower doses than previously thought and mimics a significant fraction of the profile of caloric restriction at the gene expression level," says Tomas Prolla, a UW-Madison professor of genetics and a senior author of the new report.

That 4.9 mg per kg means 4.9 mg per 2.2 pounds. So a 180 pound person would take 400 mg of resveratrol per day. Or a 150 lb person would take 334 mg per day. You can easily find resveratrol capsules in the range of 100 to 500 mg per capsule. Though one has to consider the possibility that some of these advertised potencies overstate the quality of the products.

## **Substance In Red Wine, Resveratrol, Found To Keep Hearts Young**

8th June 2008

ScienceDaily

How, scientists wonder, do the French get away with a clean bill of heart health despite a diet loaded with saturated fats?

The answer to the so-called "French paradox" may be found in red wine. More specifically, it may reside in small doses of resveratrol, a natural constituent of grapes, pomegranates, red wine and other foods, according to a new study by an international team of researchers.

Writing June 3 in the online, open-access journal Public Library of Science One, the researchers report that low doses of resveratrol in the diet of middle-aged mice has a widespread influence on the genetic levers of aging and may confer special protection on the heart.

Specifically, the researchers found that low doses of resveratrol mimic the effects of what is known as caloric restriction - diets with 20-30 percent fewer calories than a typical diet - that in numerous studies has been shown to extend lifespan and blunt the effects of aging.

"This brings down the dose of resveratrol toward the consumption reality mode," says senior author Richard Weindruch, a University of Wisconsin-Madison professor of medicine and a researcher at the William S. Middleton Memorial Veterans Hospital. "At the same time, it plugs into the biology of caloric restriction."

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"Resveratrol is active in much lower doses than previously thought and mimics a significant fraction of the profile of caloric restriction at the gene expression level," says Tomas Prolla, a UW-Madison professor of genetics and a senior author of the new report.

The group explored the influence of the agent on heart, muscle and brain by looking for changes in gene expression in those tissues. As animals age, gene expression in the different tissues of the body changes as genes are switched on and off.

In the new study - which compared the genetic crosstalk of animals on a restricted diet with those fed small doses of resveratrol - the similarities were remarkable, explains lead author Jamie Barger of Madison-based LifeGen Technologies. In the heart, for example, there are at least 1,029 genes whose functions change with age, and the organ's function is known to diminish with age. In animals on a restricted diet, 90 percent of those heart genes experienced altered gene expression profiles, while low doses of resveratrol thwarted age-related change in 92 percent. The new findings, say the study's authors, were associated with prevention of the decline in heart function associated with aging.

In short, a glass of wine or food or supplements that contain even small doses of resveratrol are likely to represent "a robust intervention in the retardation of cardiac aging," the authors note.

That finding may also explain the remarkable heart health of people who live in some regions of France where diets are soaked in saturated fats but the incidence of heart disease, a major cause of mortality in the United States, is low. In France, meals are traditionally complemented with a glass of red wine.

The new resveratrol study is also important because it suggests that caloric restriction, which has been widely studied in animals from spiders to humans, and resveratrol may govern the same master genetic pathways related to aging.

"There must be a few master biochemical pathways activated in response to caloric restriction, which in turn activate many other pathways," explains Prolla. "And resveratrol seems to activate some of these master pathways as well."

## **Red wine compound may retard cardiac aging process**

9th June 2008

Foodconsumer.com

Researchers at the University of Wisconsin-Madison and the University of Florida have found that daily intake of a small dose of a red wine ingredient known as resveratrol helps slow the aging process in the heart.

The effect was similar to that of caloric restriction. It has been known that some animals such as fruit fly live longer if they eat fewer calories.

Previous studies have shown that high doses of resveratrol extend life in invertebrates and prevent early death in mice given a high-fat diet. But it has been unknown whether a low dose would have an effect.

French people eat lots of greasy foods, but have low incidence of heart disease, the so called "French Paradox" has puzzled many people for decades. This study provided one explanation.

In the study, middle-aged mice since the age of 14 months had been fed either a control diet, a low dose of resveratrol or a calorie-restricted diet until the age of 30 months. Genome-wide transcriptional profiles were examined.

The researchers found calorie restriction affect 90 percent of at least 1,029 genes in the heart whose functions change with age. Similarly, low doses of resveratrol stopped the change in 92 percent of the age-related genes. There is some overlap between the two groups.

Resveratrol is found in grapes, pomegranates, red wine and other foods. It is now available in forms of supplements.

## **The French Way to a Healthy Heart: Red Wine?**

9th June 2008

Health News

There is something called the "French paradox" which relates to why the French are so healthy even though they consume a diet rich in saturated fats.

Scientists now think that it may be because of something called resveratrol in their diet. Certainly not a common household word, resveratrol is a natural component present, but only in very small doses, in grapes, pomegranates; and, yes also in red wine.

Could this account for why the French, who drink red wine with meals as frequently as Americans drink water, are so healthy? Hints that this may be the case come from research published in the June 3rd online edition of Public Library of Science One, where

researchers reported that in laboratory studies the addition of small doses of resveratrol to the diets of middle-aged mice seemed to have had a widespread influence on the genetic controls of aging and resulted in distinct protection for the heart.

The study found that when small amounts of resveratrol were added to the diet, the effect was the same as if calories had been reduced in the diet by 20 to 30 percent; that is, lifespan was increased, and the effects of aging were diminished.

Previous research had found that larger quantities of resveratrol added to the diet of mice, who were also given a high-fat diet, had extended their lifespan; but this new study places the possible benefits of resveratrol more into line with quantities that people would actually be likely to ingest in their diets. It also points out that the addition of low doses of resveratrol to diet, beginning in middle age, may be able to elicit many of the same benefits as those achieved by eating a reduced-calorie diet.

Jamie Barger, of Madison-based LifeGen Technologies, and lead author of the study, designed it to, at the genetic level determine what effect the addition resveratrol to diet would have, as opposed to the restriction of calories, in preventing the decline in heart function that is associated with aging.

Heart disease is a major cause of mortality in the United States, but in France, where people traditionally drink a glass of red wine with their meals, heart disease is remarkably low, especially considering their diets are soaked in saturated fats.

The authors suggest that the addition of food, or supplements, or a glass of wine, any of which contain even a small dose of resveratrol, may provide, "a robust intervention in the retardation of cardiac aging."

The study is also of importance because it indicates that resveratrol and caloric restriction may both be genetic master pathways which activate many other pathways that control aging.

Quality of life, the study strongly suggests, may be improved with the addition of resveratrol to the diet. Resveratrol may be proven to influence at least one parameter of aging, that is, cardiac function; but to determine if it can extend lifespan in ways similar to that of a caloric restricted diet is fodder for continued research.

## **Curcumin and resveratrol inhibit Nuclear Factor-kappaB-mediated cytokine expression in adipocytes**

13th June 2008

7th Space Interactive

Adipocytes express inflammatory mediators that contribute to the low-level, chronic inflammation found in obese subjects and have been linked to the onset of cardiovascular disorders and insulin resistance associated with type 2 diabetes mellitus. A reduction in

inflammatory gene expression in adipocytes would be expected to reverse this low-level, inflammatory state and improve cardiovascular function and insulin sensitivity.

The natural products, curcumin and resveratrol, are established anti-inflammatory compounds that mediate their effects by inhibiting activation of NF-kappaB signaling. In the present study, we examined if these natural products can inhibit NF-kappaB activation in adipocytes and in doing so reduce cytokine expression.

Methods: Cytokine (TNF-alpha, IL-1beta, IL-6) and COX-2 gene expression in 3T3-L1-derived adipocytes was measured by quantitative real-time PCR (qRT-PCR) with or without TNFalpha-stimulation.

Cytokine protein and prostaglandin E2 (PGE2) expression were measured by ELISA. Effects of curcumin and resveratrol were evaluated by treating TNFalpha-stimulated adipocytes with each compound and 1) assessing the activation state of the NF-kappaB signaling pathway and 2) measuring inflammatory gene expression by qRT-PCR and ELISA.

Results: Both preadipocytes and differentiated adipocytes express the genes for TNF-alpha, IL-6, and COX-2, key mediators of the inflammatory response.

Preadipocytes were also found to express IL-1beta; however, IL-1beta expression was absent in differentiated adipocytes. TNF-alpha treatment activated NF-kappaB signaling in differentiated adipocytes by inducing IkappaB degradation and NF-kappaB translocation to the nucleus, and as a result increased IL-6 (6-fold) and COX-2 (2.5-fold) mRNA levels.

TNF-alpha also activated IL-1beta gene expression in differentiated adipocytes, but had no effect on endogenous TNF-alpha mRNA levels. No detectable TNF-alpha or IL-1beta was secreted by adipocytes.

Curcumin and resveratrol treatment inhibited NF-kappaB activation and resulted in a reduction of TNF-alpha, IL-1beta, IL-6, and COX-2 gene expression (IC50 ~2uM) and a reduction of secreted IL-6 and PGE2 (IC50 ~20uM).

Conclusions: Curcumin and resveratrol are able to inhibit TNFalpha-activated NF-kappaB signaling in adipocytes and as a result significantly reduce cytokine expression. These data suggest that curcumin and resveratrol may provide a novel and safe approach to reduce or inhibit the chronic inflammatory properties of adipose tissue.

**Live to 100... And Feel Great**

13th June 2008

Cayman net News

Today, “actual age” and “physical age” are two different things. For those who care for their bodies, by following the easy dietary and exercise recommendations for anti-aging, it is possible to feel and look younger without drastic measures.

Dr. Mehmet Oz, a cardiothoracic surgeon, author, and frequent guest on Oprah Winfrey’s program has shared his tips for turning back the clock and boosting health in the process with Oprah’s viewers. His approach is not new and can easily be adapted by anyone. Here are some top points to consider:

- Choose healthy foods: Antioxidants are found in most dark fruits and vegetables, among other things help slow down or reverse the process of oxidation. The result can be reclaimed vitality and noticeable health improvements, such as the ability to fight against disease and certain cancers. A balanced diet will offer antioxidant-rich foods. Supplementing with a good multivitamin, such as Nutrina Vitamax®, will offer consistent nutrient and vitamin intake, complementing the foods you eat.

Seeing red: Resveratrol, a component of red wine, is a powerful antioxidant contained in the skin of the grapes. Resveratrol is also found in red/purple grape juice products as well as Ultimate Reds® blend of antioxidants. It is shown to slow down aging and increase endurance. It may also promote heart health.

Calcium is a must: Calcium is necessary for maintaining strong bones, which tend to become more brittle as one ages. However, taking calcium alone can contribute to constipation, which is why Dr. Oz recommends taking calcium with magnesium for optimal health. A good product to try is CalMax®, which combines calcium and magnesium together in a great tasting, carbonated beverage.

Maintain internal plumbing: Staying young also involves making sure your intestines and bowels are working properly. You’ll need 25 grams of fiber a day to get the job done. Unfortunately, that’s more than the average person eats. However, a supplement such as Nutranetics Fiber supports a healthy intestinal tract, colon and liver by helping to remove impurities and cleanse gently and naturally.

Don’t forget the exercise: Moderate daily exercise that takes inches off is also an essential component to anti-aging. Many people, however, find that after a day at the office they simply don’t have the energy to hit the gym. Adaptoprin Energy Formula contains Leuzea, an adaptogenic herb that helps promote increases in stamina, reflexes and concentration, making it more likely that you will be up to hitting the gym or going for that evening jog at the park.

## **Grapes' resveratrol may help prevent obesity**

16th June 2008

Foodconsumer.com

Resveratrol, a compound found in grapes and red wine, reduces the number of fat cells and may one day be used to treat or prevent obesity that affects millions of Americans,

according to a new study presented at the Endocrine Society's 90th Annual Meeting in San Francisco.

Early research has found resveratrol protected laboratory mice fed a high fat diet from having health problem associated with obesity by mimicking the effects of calorie restriction, which is known to elongate the lifespan of many animals, probably humans as well.

In the current study, researchers at the University of Ulm in Germany wanted to know if resveratrol exert its anti-obesity effects by changing the size or function of the fat cells.

For the study, the German team used a strain of human fat cell precursors known as preadipocytes which in the body go on to develop into mature fat cells, according to Pamela Fischer-Posovszky Ph.D., coauthor of the study and a pediatric endocrinology research fellow in the University's Diabetes and Obesity Unit.

Resveratrol prevented the pre-fat cells from increasing in the number and being converted into mature fat cells and it also hindered fat storage, the researchers found.

Additionally, resveratrol reduced certain cytokines (interleukins 6 and 8), which may be linked to the development of obesity-related disorders such as diabetes and clogged coronary arteries and increased the production of a protein called adiponectin, which is known to decrease risk of heart attack and unfortunately its production is reduced by obesity.

The new findings further the theory that resveratrol in red wine explains the French paradox, the observation that French people eat a relatively high-fat diet but have a low death rate from heart disease.

"Resveratrol has anti-obesity properties by exerting its effects directly on the fat cells," Fischer-Posovszky said. "Thus, resveratrol might help to prevent development of obesity or might be suited to treating obesity."

Fischer-Posovszky cautioned through that there is no sufficient knowledge about the effects of long-term treatment with resveratrol although one study has found a single dose of up to 5 grams of the compounds daily, a dose that is much higher than the amount found in a bottle of red wine, caused no serious side effects in healthy individuals.

However, she pointed out that another study suggested that resveratrol may stimulate the growth of human breast cancer cells probably because the chemical structure of the compound is similar to a phytoestrogen found in some plants.

### **Red wine component resveratrol might fight obesity, lab tests show**

Resveratrol, the chemical in red grape skins that seems to underlie the healthful effects of red wine, limits the number of fat cells that can develop from stem cells, a new study finds.

The finding, combined with resveratrol's other beneficial effects at the cellular level, might explain in part the French paradox, said study coauthor Martin Wabitsch, a pediatric endocrinologist at the University of Ulm in Germany, who presented the work Monday in San Francisco during a meeting of the Endocrine Society. The paradox refers to the observation that people in France seem to have a low incidence of coronary heart disease and seem to stay thin despite a diet high in fats.

Scientists formerly believed that people have a set number of fat cells at birth, but now widely understand that stem cells can differentiate into full-fledged fat cells well into adulthood and old age.

In the new study, laboratory tests on human cells showed that resveratrol inhibits the number of nascent fat cells that grow into mature fat cells, Wabitsch said. This could limit the addition of fatty tissue in the body, he hypothesizes. If fats and carbohydrates from food cannot be larded into fat cells, they are typically broken down and burned as energy instead, he says.

Thus, fat deposition might not depend solely on the amount of energy consumed, he says. With resveratrol, he said, "It might be metabolized more actively instead of stored."

Bolstering that assertion, Wabitsch and his colleagues also showed that resveratrol lowers the cells' production of interleukin-6 and -8, two inflammatory proteins that are elevated in obese people and may contribute to fat accumulation.

What's more, in these tests resveratrol also induced mature fat cells to maintain healthy amounts of a valuable compound called adiponectin, which earlier research suggested can protect against diabetes.

In addition to showing up in red grape skins, resveratrol occurs in Japanese knotweed. Earlier laboratory and animal tests suggested that resveratrol may fight aging, cancer, inflammation and atherosclerosis. But scientists have not yet reported test results for resveratrol in people.

Resveratrol's mechanism of action is not entirely clear, but the compound seems to activate at least one member of a family of proteins called sirtuins. While also poorly understood, some sirtuins show up in fat cells.

Previous work showed that low levels of sirtuins allowed fat cells to add fats and to proliferate freely from nascent to mature stages, a recipe for weight gain. Conversely, that work also showed that an increase in sirtuins — in that case the compound Sirt2 — kept stem cells from maturing into full-fledged fat cells and inhibited mature fat cells from filling with fats.

In the new study, resveratrol's good effects failed to emerge in either nascent or mature fat cells engineered to lack a sirtuin called Sirt1, Wabitsch said.

As potential therapeutics, "the sirtuins are a new class in the armamentarium of diabetes and pre-diabetes management," says Henry Anhalt, a pediatric endocrinologist at Animas Corp. in West Chester, Pa., who wasn't involved in this study. Sirtuins seem to curb the risk of obesity, cardiovascular disease and inflammation, all of which have been correlated with development of diabetes and its complications. The finding that resveratrol seems to work through a sirtuin (Sirt1) opens up new research opportunities, he says.

But Anhalt notes that the quantities of resveratrol used in these and other tests have been large, far more than the amounts delivered to a cell in a person who just drank a glass or two of pinot noir. Being able to produce resveratrol in a capsule or pill and not having to drink excess amount of wine to get enough "would be a tremendous advance," if it indeed proves therapeutic, he says.

Resveratrol has shown considerable potential since it was discovered in the 1990s, with particular attention paid to its anticancer effects. The compound seems to fight cancer by inducing malignant cells to undergo a form of programmed cell suicide called apoptosis. In contrast, resveratrol thwarts fat cell proliferation by keeping nascent cells from developing into mature fat cells, Wabitsch said.

## **Can You Live to be 150?**

17th June 2008

The Daily Reporter

Antioxidants are part of the secret to longevity

The French know and love their red wine. What they may not know are the health benefits offered up in each and every glass. Despite diets typically high in saturated fat, the French have relatively low incidences of heart disease and they may be living longer and feeling younger. They could have the wine to thank for that because of a relatively unknown antioxidant found in the beverage: resveratrol.

Many people are familiar with the term antioxidant. Antioxidants do just what their name implies - remove potentially damaging oxidizing agents from a living organism. Oxygen, while needed for life on a whole, deteriorates living organisms over time. It can also take its toll on the body, leaving it susceptible to disease and speeding up the aging process. The medical community has determined that a diet high in antioxidant-rich foods is important for overall health and for anti-aging purposes. Known as "nature's sponge," antioxidants absorb and remove harmful free radicals from the body, and generally promote youthful vigor and improved general health.

Foods full of antioxidants tend to be vibrant colored fruits and vegetables. Antioxidants are also found in olive oil, flax seed, tea, and other foods and beverages. An antioxidant making headlines these days is resveratrol, found in the skin of grapes, and thus red wine. Because red wine is fermented with grape skins longer than is white wine, red wine contains more resveratrol. But drinking wine is not the only, nor optimal way to get the resveratrol the body needs.

David Sinclair is a Harvard medical researcher who has spearheaded studies into the effects of resveratrol on mice and people. He recently appeared on a Barbara Walters television special expounding on the benefits of resveratrol, including its propensity to reverse some signs of aging. He explained to Walters that the benefits to drinking wine are there, but a person would have to consume 100 to 1000 bottles of red wine to equal the amount of the resveratrol needed for profound health improvements. Therefore, he has found a way to isolate resveratrol and concentrate it so that it can be used in supplement form.

In lab mice trials, scientists demonstrated that it kept overfed mice from gaining weight, improved physical endurance and speed, and seemed to slow down their aging process. For individuals looking for a fountain of youth and to bolster overall health, resveratrol used in conjunction with other antioxidants just may be the way to go.

When Dr. Michael Pinkus, founder of the antioxidant supplement Ultimate Reds® heard about the health benefits of resveratrol he just had to add the ingredient to his product. His Ultimate Reds is one of the most powerful sources of fruit and vegetable antioxidants available today because it incorporates 24 natural antioxidants - and now resveratrol. The product is actually a flavorful powder that mixes into a great tasting beverage so it's easily absorbed and starts working right away

When used in conjunction with a balanced low-fat diet and exercise, Ultimate Reds can go a long way to promoting vigor and health.

## **Red Wine May Curb Fat Cells**

17th June 2008

The New York times

Red wine appears to protect the heart and prolong life. Now a new study suggests it may also be a weapon against obesity.

Resveratrol, a compound present in grapes and red wine, appears to inhibit the development of fat cells and have other anti-obesity properties, according to a report from researchers at the University of Ulm in Germany. The findings, to be presented this week at The Endocrine Society's annual meeting in San Francisco, show that in laboratory experiments with so-called "pre-fat cells," resveratrol prevented them from converting into mature fat cells. Resveratrol also hindered fat storage in the cells.

The compound also reduced production of certain cytokines, substances that may be linked to the development of obesity-related disorders like diabetes and clogged coronary arteries. Resveratrol also stimulated the formation of a protein called adiponectin. The substance, known to decrease risk of heart attack, is diminished by obesity.

“Resveratrol has anti-obesity properties by exerting its effects directly on the fat cells,” said the study’s lead author, Pamela Fischer-Posovszky, a pediatric endocrinology research fellow in the university’s diabetes and obesity unit. “Thus, resveratrol might help to prevent development of obesity or might be suited to treating obesity.”

Whether to add red wine to your daily diet must be balanced against other health risks. For people with alcohol dependency problems, the health benefits of red wine are far offset by the risks of drinking to excess. Excessive use of alcohol can lead to addiction, traffic accidents and potentially fatal medical problems.

Increasingly, studies support the idea that drinking a small amount of alcohol each day — no more than one to two servings — is better for you than not drinking, but the findings don’t apply to everyone. Even small amounts can increase risk for certain health worries, like breast and colon cancer. Although those risks are generally offset by the extra heart benefits, some people may decide it is not worth it.

## **Cardiologist Praises Latest Resveratrol/Red Wine Research**

24th June 2008

The earth Times

William S. Gruss, M.D., board-certified cardiologist and author of the best-selling book on resveratrol, *A CARDIOLOGIST'S GUIDE TO ANTI-AGING, ANTIOXIDANTS & RESVERATROL*, praises the latest research on resveratrol by a team of scientists in Madison, Wisconsin, published June 2008

This newest study on resveratrol shows that low-dose resveratrol inhibited genes that cause age-related health problems, prolonging life-span. (Previous studies showed high doses were shown to stimulate the SIRT1 gene, which plays a role in extending life span.) Low-dose resveratrol consumption does not seem to activate the SIRT1 gene.

"This supports human studies showing that red wine or red wine supplements containing resveratrol are especially beneficial for heart health," says Dr. Gruss. "It's a very exciting study. It identifies the role of resveratrol in supporting heart health at the genetic level."

Resveratrol is a non-flavonoid polyphenol commonly found in red wine. The French Paradox, the phenomenon of dramatically lower rates of death due to heart disease in France compared to the U.S., has stimulated massive research

into compounds of red wine. Many of the well-known heart benefits of red wine have been attributed to resveratrol.

"Resveratrol has emerged as one of the most fascinating and compelling nutritional components in modern scientific research," says Dr. Gruss.

Resveratrol has been the focus of ground-breaking anti-aging research by scientists at Harvard University (Baur, 2006) and in France (Lagouge, 2006). These and previous studies established resveratrol as the only known compound to extend life-span of vertebrate (mouse, fish) and invertebrate (yeast, roundworms, fruit flies) life forms.

### Resveratrol Inhibits Aging Genes

Prior to the resveratrol research, the only known method to extend life-span was a near-starvation diet. Caloric restriction (CR) has been found to retard aging and physiological decline. CR is so restrictive that it is not practical for humans as a way of prolonging life-span.

In the study, researchers fed one group of mice a control diet, one group a calorie restricted diet, and one a low dose of resveratrol (equivalent to about 350mg a day for humans). They found "a striking transcriptional overlap of CR and resveratrol in heart, skeletal muscle and brain."

"The genetic profile in brain, heart and skeletal muscle tissue of the mice on CR and resveratrol were nearly identical as they aged. They were far healthier than the control mice," explains Dr. Gruss.

Genetic and Functional Prevention of Cardiac Aging by Resveratrol and CR  
Heart disease is the number one killer of Americans. According to the study, cardiac function declines with age in both mice and humans.

"The most exciting conclusion from this study is that CR and resveratrol almost completely prevented the age-related decrease in an important parameter of heart health-the myocardial performance index, an overall assessment of cardiac function," says Dr. Gruss. "Researchers concluded that resveratrol prevented cardiac aging at both the genetic and functional levels."

Comparing young and old mice fed the control diet, there were 1,029 genes that changed as the mice got older. CR opposed the changes in 921 (90%) of the age-related genes, with 536 of the genes making a significant difference. Resveratrol opposed 947 (92%) of age-related changes as the mice got older, with 522 of the genes representing highly significant differences between the old control and old resveratrol groups.

Changes in genes are considered one of the major biomarkers of aging.

Supplementing with resveratrol at low doses is a "likely robust intervention in the retardation of cardiac aging," according to the study's authors.

## Genetic Prevention of Brain and Skeletal Muscle Aging by Resveratrol and CR

CR and resveratrol also opposed genetic aging of brain and skeletal muscle, though to a lesser extent than heart aging. Aging resulted in the change of 515 skeletal muscle genes; 26% were opposed by CR and resveratrol. In the brain (neocortex), CR and resveratrol inhibited 19 and 13%, respectively, of the 505 highly significant age-related changes.

## Mechanisms of Action of Low-Dose Resveratrol

Low-dose resveratrol appears to enhance health by different pathways than high-dose resveratrol. Low-dose resveratrol did not enhance health by altering the well-known factors postulated to impact aging: IGF-1, insulin, SIRT1, oxidative stress.

The mechanism of action of low-dose resveratrol appears to be at the genetic chromosome (chromatin) level. Other mechanisms of action of low-dose resveratrol may be through stimulation of AMP kinase and nitric oxide synthase activity.

## Resveratrol and Dietary Supplements for Anti-Aging

"This study confirms that dietary resveratrol can improve genetic performance in old age of vitally important organs. It's a tremendous breakthrough! You can improve your genetic performance as you get older by starving yourself, or you can take a glass of red wine or a resveratrol supplement," concludes Dr. Gruss.

In his book, Dr. Gruss recommends dietary supplements to address the four factors of aging: genetic breakdown, oxidation, inflammation, and reduced mitochondrial energy.

"I prefer alpha lipoic acid and oligomeric proanthocyanins (OPCs) from grape skin and seed as antioxidants; acetyl L-carnitine as a mitochondrial energy booster; and quercetin to reduce inflammation. Resveratrol is obviously the first choice for genetic support as you age," says Dr. Gruss.

## **Topical Skin Care for Anti-Aging Can Get a Boost With Resveratrol**

1st July 2008

The Open press

ou may have heard that the incidence of heart disease in France is far lower than in the U.S. Scientists spent a long time trying to figure out how that could possibly be when the traditional French diet – lots of cheese, bread, sauces, wine with every meal - includes pretty much everything we're advised not to eat. After much research, they think they've found the secret - an excellent anti-aging ingredient you might want to add to your skin care routine.

What is the magic ingredient? It's called resveratrol, is found in many red wines, and is an antibiotic produced by plants when under attack by bacteria, fungi and other substances that can cause disease or illness. Although the formal research has been conducted primarily in test tubes and on animals, resveratrol has reportedly been effective in fighting viruses, inflammation, cancer and neurological diseases. It is also being touted for its anti-aging effects.

While antibiotics are not new in the skin care field for some skin diseases, it's unusual to think that an antibiotic can also be effective when it comes to aging. However, many scientists now believe that a host of degenerative diseases are actually caused by bacteria and inflammation. That certainly is true of some skin conditions, which is one of the reasons for the popularity of antibacterial skin care products.

You may prefer to get your resveratrol from something other than red wine, in which case, it's available as a supplement. I would do a little research and get the most natural product you can find.

While resveratrol may be just what the doctor ordered for internal conditions that could make your skin look older, you still need a topical skin care product to keep the surface layer of the skin intact – which means, basically, ensuring no damage is done that would strip the surface of the natural protective layer of oils, fats and dead skin cells. Many of us spend our days assaulted by environmental chemicals and pollutants, not to mention the chemicals in our household and skin care products, and we need daily protection.

Thousands of doctors now recommend a shielding lotion. A good shielding lotion bonds with the outer layer of the skin to form a new protective layer that locks in natural moisture and keeps out chemicals. This skin care treatment prevents skin problems, and heals them.

If you're interested in a natural anti-aging product that may help prevent many degenerative diseases and make you look and feel younger, give resveratrol a try. But for topical natural skin care, check out the shielding lotion!

## **Compound in Red Wine Slows Aging, Prevents Cardiovascular Diseases**

4th July 2008

eNews

A new Harvard study initiated by David Sinclair of Harvard Medical School and Rafael de Cabo of the National Institute of aging shows that resveratrol, a compound found in

grapes and red wine provides heart benefits, preventing cardiovascular diseases, reducing heart inflammation, enabling stronger bones and preventing eye cataracts. The substance has the effect of an activator for more than 1,000 genes affecting the heart. The function of these genes changes as a person ages but the resveratrol helps the genes to work the same way they do in a younger heart.

Tests in mice found that the cholesterol was significantly reduced after 10 months of treatment, the aortas of mice treated with resveratrol functioned significantly better compared to the one of the untreated mice, the compound also moderated inflammation in the heart, resveratrol treatment reduced cataract formation in 30-month-old mice. But most mice didn't end up living longer because they don't usually die as a result of heart disease and they don't suffer from weakening bones.

“From a health point of view, the quality of life of these mice at the end of their days is much better. It suggests that resveratrol may extend productive, independent life, rather than just extending life span,” Dr de Cabo said. “We found that while quality of life improved with resveratrol, the compound did not significantly affect overall survival or maximum lifespan.”

Although the findings indicate that grapes don't help you live longer, resveratrol treatment may reduce the risk for age-associated disease and stress, extending “productive independent life” and it might help the elderly stay hale and hearty. Resveratrol is also found in the crust of peanuts and walnuts.

## **Red Wine Ingredient Could Improve Health In Old Aged**

4th July 2008

Medical News today

An international team of scientists has discovered that taking large doses of a red wine ingredient in mid life can ward off symptoms of aging in mice. The effect was to extend quality rather than length of life.

The study is the work of researchers based at the National Institute of Aging (part of the National Institutes of Health) in Baltimore, Maryland, USA, and Harvard Medical School in Boston, Massachusetts, USA, and others, and is published in the 3rd July online issue of Cell Metabolism.

The chemical resveratrol, which is present in red wine, reduced a number of symptoms generally associated with aging, bringing such benefits as improved cardiovascular function, greater motor coordination, reduced cataracts and better bone density.

Corresponding co-author Dr Rafael de Cabo of the National Institute on Aging said that rather than extending lifespan, resveratrol extended the length of productive independent living during that lifespan.

"From a health point of view, the quality of life of these mice at the end of their days is much better."

David Sinclair of Harvard Medical School, the other corresponding co-author of the study, said he was surprised at how broad the effects were in the mice, adding that:

"Usually, you focus on slowing down or ameliorating one disease at a time. In this case, resveratrol influences a whole series of seemingly unrelated diseases associated with aging."

Sinclair, de Cabo and colleagues also found that resveratrol mimics the beneficial effects of eating fewer calories by triggering gene activity similar to that which occurs during restricted diets or when mice are only fed every other day.

The authors suggested that should the chemical prove to have the same impact in humans, the benefits should be greater, because unlike people, mice don't usually suffer from weakening bones or die from heart disease.

Previous research has already revealed that eating a nutritious daily diet or reducing calorie intake by 30 per cent, can delay the start of a range of age-related diseases, increase stress resilience, and slow down decline of functioning. However, while calorie restriction would work in humans, it is unlikely to be taken up by many, and may even present risks, for instance to the elderly or critically ill.

So the next best thing is to find something that mimics the effect of calorie restriction, and that's how the researchers in this study came up with the idea of resveratrol because it stimulates SIRT1, a protein known to be associated with longevity in many living things, including yeasts and mammals. In this study Sinclair, de Cabo and colleagues pinpointed the mechanism involved.

They put one year old mice into four groups: two groups had the standard control diet one with and one without resveratrol, and two groups had the every other day feeding diet, one with and one without resveratrol.

The results showed that:

- \* The mice on resveratrol experienced changes in gene expression for important metabolic tissue such as liver and muscle that were similar to changes induced by restricted calories.

- \* Overall, regardless of diet, the health of the mice on resveratrol improved, as reflected by reductions in osteoporosis, cataracts, and vascular dysfunction, and improvements in motor coordination.

- \* However, as expected, the mice lived longer only when fed on a high calorie diet.

The authors concluded that:

"Long-term resveratrol treatment of mice can mimic transcriptional changes induced by dietary restriction and allow them to live healthier, more vigorous lives."

"In addition to improving insulin sensitivity and increasing survival in [high-calorie fed] mice, we show that resveratrol improves cardiovascular function, bone density, and motor coordination, and delays cataracts, even in nonobese rodents," they added.

The authors suggested their findings confirmed it was now feasible to pursue an oral form of "dietary restriction mimetic".

Clinical trials testing the resveratrol for treatment of type II diabetes are already in progress, said the authors, and other chemicals with similar effects are also being developed.

## **Red Wine Slows Down Aging**

5th July 2008

EmaxHealth

Researchers have found that resveratrol - a component found in red wine and grapes - can significantly reduce age related health problems in middle-aged mice.

A joint team of researchers from Harvard Medical School and National Institute on Aging examined mice, which were given different diets. One group was given a low calorie diet and the other group was given high calorie diet.

When mice were at their age of 12 months, which is equivalent to human 35 years, some of the mice were given supplements based on resveratrol. Those given the supplements were found to have less age related diseases than those with no supplements. The interesting thing is that the diseases that resveratrol was able to prevent were not connected with each other at all.

Resveratrol fed mice had good cardiovascular health, strong bones, less obesity related problems, better balance and coordination, better eye health. However, these mice did not live significantly longer than those taking no supplements. Researchers mention that they are more interested in improving quality of life than just making life span longer.

Research found that resveratrol has a calorie reversing effects because technically speaking, mice on high calorie diet should be overweight or obese, but they were not. This is very similar to 'French paradox', when French people usually taking high calorie food stay slim, probably because they drink red wine with every meal.

Dr David Sinclair from Harvard Medical School in Boston, US said: "I was most surprised by how broad the effects were in the mice. Usually, you focus on slowing down

or ameliorating one disease at a time. In this case, resveratrol influences a whole series of seemingly unrelated diseases associated with ageing."

Resveratrol fed mice showed similar health condition as those on a low calorie diet, which is already proved to make both mice and humans healthier and life span longer. However, researchers urge that people should not just start taking resveratrol based supplements, because the supplements may be a bad combination with other drugs and may lead to adverse side effects.

## **Anti-Aging Effects of Resveratrol in Red Wine Improve Quality of Life**

5th July 2008

News Locale

Further evidence showing benefits of red wine emerged on Thursday as researchers revealed a compound found in red wine may be able to protect the heart by exerting anti-aging effects.

The study on middle-aged mice homed in on the compound called resveratrol. While mice fed on resveratrol did not live longer than their counterparts that were not given the compound, they did enjoy healthier lives.

The mice in the study were divided into two groups with one group being fed a high-calorie diet supplemented with resveratrol while the other group got a high-calorie diet without the compound. Researchers report in the journal *Cell Metabolism* the former group outlived the latter group.

Lead authors David Sinclair of Harvard Medical School and Rafael de Cabo of the National Institute of Aging said that resveratrol appeared to extend healthy living rather than just prolonging lifespan.

Resveratrol is a natural constituent of grapes, pomegranates, red wine and other foods and is known to have a widespread influence on genes that control aging and also protect the heart.

Polyphenols like resveratrol are thought to be important nutrients for human health especially in combating oxidative stress, which is a leading cause of cardiovascular disease. Dietary sources of polyphenols include apples, blackberries, blueberries, cantaloupe, cherries, cranberries, grapes, pears, plums, raspberries, strawberries, broccoli, cabbage, celery, onion and parsley.

Resveratrol is also found in red wine, chocolate and green tea.

While news of the potency of resveratrol as an anti-aging agent is encouraging, consumers must note the study was on mice and on actual people. So binging on red wine may have to wait till human trials provide substantial results.

## **Red wine could help prevent breast cancer**

7th July 2008

The telegraph

Laboratory tests have shown that a chemical found in the skin of grapes could halt the development of most cases of the disease.

Breast cancer is the most common type of cancer among women, and almost 45,000 cases are diagnosed in the UK every year.

Now scientists have found that a chemical called resveratrol, which is also found in blueberries, bilberries, cranberries and peanuts, can suppress the creation of tumour cells.

The chemical works by blocking the way that oestrogen combines with DNA in a woman's bodies to create the cancer.

Researchers found that even low levels of resveratrol, the equivalent to that found in a typical glass of red wine, was enough to create the effect.

"We believe that this could stop the whole progression that leads to breast cancer down the road," said Eleanor Rogan, from the University of Nebraska Medical Centre, who led the study.

The scientists now plan to test the findings, published in the journal Cancer Prevention Research, in larger human trials.

Resveratrol has previously been linked to anti-aging properties.

The chemical is just one of a number of so called "healthy chemicals" found in red wine, called polyphenols.

## **Is Red Wine a Cure for Aging?**

8th July 2008

News radio WOAI

It's been one of the great urban legends for years, the idea that drinking red wine helps you live longer. Researchers at the Barshop Center for Aging Studies at the University of Texas Health Science Center have participated in the first scientific study of this claim, and there is good news and there is bad news.

The bad news first. There is no evidence in studies done so far that drinking red wine extends your life, according to Dr. Arlen Richardson of the Barshop Center. But the good news, the wine could keep you healthier for the life you have left.

Dr. Richardson says what is important is not the wine itself, but a compound called Resveratrol, which is found in the skin of the grape, and in red wine. He says while tests

have indicated that Resveratrol may extend life in tiny life forms, tests on mice have indicated no such benefit.

But he says Resveratrol does appear to help the mice and rats keep more elasticity in their blood vessels, avoiding the hardening that often accompanies aging. He says there were other health benefits as well.

The animals as they get older seem to show a reduced aging in the sense that they are more health, that sort of thing," he said.

"It may be that Resveratrol is part of the way there, but it is not quite as strong of an anti aging element as we had hoped."

## **Natural chemical may halt cancer**

10th July 2008

Nursing

New research has found that a common dietary supplement, which also occurs naturally in red wine and red grapes, could potentially be used to prevent breast cancer.

Resveratrol, which is sold in extract form as a dietary supplement, suppresses the creation of tumour cells that lead to most types of breast cancer, suggesting a potential role for the substance as a preventative treatment.

It works by blocking the way oestrogen combines with DNA to create the cancer, with even low levels of the chemical being enough to create the effect. Many breast cancers are fuelled by increased oestrogen, which collects and reacts with DNA molecules to form adducts.

"Resveratrol has the ability to prevent the first step in the process by blocking the formation of the oestrogen DNA adducts," said Professor Eleanor Rogan, who led the research at the University of Nebraska Medical Centre in the US.

Professor Rogan, whose team published the findings in the journal Cancer Prevention Research, said resveratrol works by inducing an enzyme called quinone reductase, which reduces the oestrogen metabolite back to inactive form and decreases the risk of cancer.

The researchers now plan to test their findings in larger human trials.

## **Science Briefing: Study looks at age reversal**

25th July 2008

FT.com

Study focuses on age reversal

New possibilities for slowing or even reversing the ageing process have been raised by a study, published in the journal *Cell* this week, which seems to show that genetics rather than tissue damage is the reason animals grow old.

Conventionally, scientists have argued that ageing is the inevitable consequence of wear and tear on cells and tissues over time: toxins, ionising radiation, disease and stress all play a part in contributing to decline and death.

Now a team under Stuart Kim at Stanford University, working on minute nematode worms, has found that hundreds of genes implicated in the ageing process are turned on by a biological switch called *elt-3*, which becomes more abundant as the animal grows older.

The scientists tried to age the worms artificially by subjecting them to stresses such as heat and radiation but none of these had any effect on the ageing genes. Prof Kim concluded that the higher level of *elt-3* in older animals is the result of control mechanisms gone wrong, something he calls “developmental drift”.

If ageing is not the result of chemical catastrophe but driven by changes in regulatory genes, it could, in theory at any rate, be slowed down or stopped. Prof Kim cannot yet say whether developmental drift occurs in humans.

#### New theory on plant hormones

Steroids have been in the news because of their misuse by athletes looking to build big muscles; but these hormones are also vital for growth and development in plants, and scientists at the Carnegie Institution have a new theory for how they work.

Understanding how plant steroids turn on genes for growth could lead to more abundant harvests as well as new insights into how hormones operate in both plant and animal cells.

Their research is published in *Science* magazine this week. Steroids have a different mode of action in plants and animal cells. In animals, there are receptor molecules within the cell nucleus. In plants, the steroids – called brassinosteroids – attach themselves to receptors on the cell surface.

The puzzle for researchers was to work out how the message to grow and prosper was transferred from the outside of the cell to the genes in the nucleus. They knew proteins would be involved – but which of the thousands in every cell?

A new biological technique called proteomics was the answer. It enabled researchers to identify all the proteins in the cell and, by separating off those associated with the cell membrane, they were able to identify proteins called kinases as the all-important chemical messengers.

Zhi-Yong Wang, who led the research, said the discovery filled a big gap in the understanding of hormone action.

Missing link on metabolism

You have lunch at about midday and dinner in the evening – which might simply be habit but is more likely to be because the body requires more energy at certain times of day.

This indicated to scientists that there must be a link between human metabolism and the circadian clock, the internal mechanism that keeps track of time and regulates the body accordingly.

The connection proved elusive, however.

This week researchers at the University of California, Irvine, claim to have solved the mystery.

The missing link is a protein called SIRT1 that is already known to have life-extending properties. Red wine, which in moderation is thought to enhance health, contains the chemical resveratrol, which boosts production of SIRT1.

One implication of the research is that faults in the SIRT1 mechanism might influence behaviour, including the overeating that leads to obesity. According to team leader Paolo Sassone-Corsi, it might be possible in future to treat some metabolic disorders by manipulating the mechanism.

## **Longevity Drug Could Affect Biological Clock**

25th July 2008

Wired

Two new studies have found the molecular link between circadian rhythm and metabolism -- and it turns out to be a protein targeted by resveratrol, a potentially longevity-enhancing drug.

Neither of the studies, published yesterday in Cell, tested the metabolic effects of resveratrol, but they strike a note of caution for those -- including myself -- who expect resveratrol to be the first of an entire class of drugs that slow the physical and mental deterioration of aging.

Resveratrol's target is SIRT1, one of a group of proteins called sirtuins that maintain cellular function. But the researchers -- one group from the University of California, Irvine and another from the University of Geneva -- say that SIRT1 is also an important piece of our biological clocks: it links cell-level circadian rhythms with body-level physiology, keeping appetite and wakefulness in a smoothly-regulated cycle.

Whether sirtuin-activating drugs will interfere with this is unknown, but it shouldn't be hard to test. (Talk about a side effect: you'll live long and healthily, but have trouble sleeping and get hungry at inconvenient times! I'd take it.) In the meantime, though, the studies are an useful reminder that these drugs -- though extremely promising -- aren't yet proven.

The NAD<sup>+</sup>-Dependent Deacetylase SIRT1 Modulates CLOCK-Mediated Chromatin Remodeling and Circadian Control [Cell]

SIRT1 Regulates Circadian Clock Gene Expression through PER2 Deacetylation [Cell]

## **Resveratrol may contribute to breast cancer prevention**

29th July 2008

HemOnc Today

Resveratrol prevented the formation of estrogen-DNA adduct and neoplastic transformation in MCF-10F cells, which could avert the development of breast cancer, according to the results of a recent study.

The researchers at the University of Nebraska found resveratrol, a natural antioxidant, to have anticarcinogenic effects in diverse in vivo and in vitro systems.

Eleanor Rogan, MD, PhD, a professor at the Eppley Institute for Research in Cancer and Allied Diseases at the University of Nebraska Medical Center, said the antioxidant, which appears naturally in red grapes and other plants and is sold as a dietary supplement, could thwart breast cancer before it starts.

“Resveratrol has the ability to prevent the first step that occurs when estrogen starts the process that leads to cancer by blocking the formation of the estrogen DNA adducts,” she said in a press release. “We believe that this could stop the whole progression that leads to breast cancer down the road.”

Cytochrome P450-mediated oxidation of catechol estrogens to quinines that react with DNA to form depurinating estrogen-DNA adducts may lead to genotoxicity. The researchers hypothesized that the resveratrol acts to regulate the dynamic balance of estrogen metabolism by regulating enzymes and chemically preventing estrogen metabolite formation in MCF-10F cells.

Using cells collected by the American Type Culture Collection, the study team showed a chemoprotective effect in resveratrol. The researchers stated that effect is caused by the antioxidant's free radical scavenging ability, as well as its regulating role for phase-1 activating enzymes and phase-2 deactivating enzymes.

The researchers found that resveratrol suppressed the expression of cytochrome P450 and the formation of 2,3,7,8-tetrachlorodibenzo-p-dioxin

## Three Legal Ways to Enhance Your Physical Fitness

6th Aug 2008

ohnyNews

As the Olympics in Beijing ("city of the north," literally translated from Chinese) draw closer, the conventional media focus on illegal ways of doping that are applied by many athletes: using male sex hormones or their derivatives, such as derivatives of testosterone, and growth hormones and its derivatives to build up more muscles; using adrenaline, cortisone or cocaine or derivatives from these substances to battle fatigue; or using erythropoietin (EPO), or so-called EPO-mimetics, to get more red blood cells that transport oxygen to the muscles.

It is illegal to use these substances unless prescribed by a medical doctor as a cure for an illness. What's more, all of these are very dangerous for human health. I want to tell you about three legal and healthy ways to increase your physical performance.

Creatine is an ingredient of red meat, but it is also available without prescription as a pure substance. It is not harmful to your health if you take only a small dash of it daily, and make a pause of two weeks in taking it every three weeks. It increases your endurance in sports like long-distance running and swimming, but taking too much can cause dehydration, since it leads to the storing of excess water in the muscles. It makes you look more athletic and makes you a little stronger. Taking too much can harm your kidneys.

Resveratrol is a compound of many plants, such as peanuts or wine grapes. The skin of red wine grapes especially contains a lot of resveratrol. You may drink grape juice of red wine or eat peanuts; resveratrol is also available from online shops as a pure substance. Right now, there is a lot of research going on about resveratrol, and papers about it have been published in high-ranking scientific journals like science and nature. Many researchers claim that it has two effects: It lengthens the life span by mimicking caloric restriction, and it increases endurance and stamina in long distance running, cycling and swimming. (See University of Cologne, Germany: "Resveratrol improves health and survival of mice on a high-calorie diet," Josef A. Baur et al., Nature, 2006.)

Of course you should always stay in training, stay physically active. The best advice is that you exercise three or four days a week and rest the other days of the week. When you eat, you should eat carbohydrates in the morning and protein in the evening before you go to sleep.

You should avoid too much fat and too much alcohol and should not smoke. You should take care of your mental balance and peace of mind: avoid stress, enjoy friendships and find a partner that suits you. A happy love and sex life also helps. It is important that you sleep well.

Nobel Prize winner Linus Pauling propagated a highly controversial therapy: Mega-vitamin therapy. First, some psychiatrists wanted to treat schizophrenia with this therapy, but as more and more scholars had doubts about its effects, Linus Pauling wanted to use it to increase lifespan. Everybody should be cautious not to overdose on vitamins that are soluble in fat (vitamins E, D, A and K). Vitamin A especially can be very toxic and even deadly for the liver.

Some of the explorers of the North Pole and the Arctic have perished because they ate the liver of polar bears and seals, which may contain an overdose of vitamin A. It is hard to overdose on vitamins that are soluble in water like the vitamins C (ascorbic acid) and folic acid. Yet taking too much of those might cause trouble with your digestion and your stomach or even with your kidneys. I doubt if using mega-vitamin therapy can make you live longer, yet, when it comes to playing sports, it can make you more awake and give you more stamina and endurance (in running, swimming and cycling, soccer, tennis, basketball, etc.). I should also mention that you need not to take vitamin pills, eating a lot of fruit and vegetables should also do it.

## **New 'wine drug' may treat age-related diseases**

11th Aug 2008

Barchester

Red wine ingredient may hold key to a new treatment, study suggests.

A new drug may be developed from an ingredient found in red wine, which could combat the effects of age-related diseases such as Alzheimer's and type-two diabetes, according to scientists.

Sirtris, a GlaxoSmithKline company, has said that mice treated with resveratrol at middle-age and above showed an overall improvement, with positive effects on bone health, the cardiovascular system and motor function.

Researchers suggested that the drug mimicked the effects of a lower-than-usual calorie diet, which in humans is thought to be linked to certain health benefits.

Study team member Dr Peter Elliott, senior vice-president of development at Sirtris, said: "A small molecule SIRT1 activator that safely mimics the ability of dietary restriction to delay age-related diseases would be of great benefit."

Chief executive officer Dr Christoph Westphal added: "This study informs us how frailty in mice can be delayed and this knowledge could help us translate pre-clinical benefits to humans."

Last week, Physorg.com reported that research published in the Neurology journal had suggested the consumption of oily fish may protect the brain against memory loss and other health problems.

## **Grape Seeds May Combat Alzheimer's**

12th Aug 2008

Wine Spectator

Compounds commonly found in red wine and grape seeds may help treat and prevent Alzheimer's disease, according to new research from the Mount Sinai School of Medicine.

The research, published in the *Journal of Neuroscience*, found that polyphenols derived from grape seeds during red winemaking (a family of compounds such as tannins, lignins and flavonoids) may be useful in fighting and preventing the degenerative disease, which attacks the brain. A four-month study, headed by Dr. Giulio Pasinetti, professor of neuroscience at the Mount Sinai School of Medicine, discovered that the polyphenols helped reduce the deterioration of brain functioning in the mice.

Pasinetti and his team gave nonlethal doses of grape seed extract to genetically modified mice that had attributes of Alzheimer's disease. In studying the cognitive functionality of the animals following treatment, the researchers found that the polyphenolic extract from grape seeds helped prevent the formation of a beta-amyloid, which can cause a blockage in the brain, or plaques that have been implicated in memory loss and Alzheimer's. Tested animals modified with Alzheimer's were found to retain their normal brain function after doses of the grape derivative.

"When we looked into the brains of the mice, we found that the grape seed extract was so beneficial that it almost completely prevented the typical characteristics of degeneration of the brain," said Pasinetti.

The evidence showing that red wine can be a major factor in the treatment and prevention of neurological diseases, including various forms of dementia, is becoming substantial. One recent study found that resveratrol, a compound found in the skin of grapes, can help offset the development of Alzheimer's disease in light to moderate wine drinkers, ages 65 and older, while researchers at the Sahlgrenska Academy at Göteborg University in Sweden found that women wine drinkers were less likely to suffer from dementia later in life. Most recently, another "wine drug" featuring resveratrol, developed by the pharmaceutical firm Sirtris, was found to help fight aging, heart disease, diabetes, Alzheimer's and cancer in mice; clinical trials are now underway.

The focus on grape seeds is a different approach. Pasinetti and his team of researchers are currently designing their initial clinical study on humans, which will begin in approximately three months. Pasinetti is hopeful that further studies can help in the treatment of other neurological diseases, including Huntington's and other forms of dementia. The researchers recognize that there are other neurological problems, in addition to the buildup of beta-amyloids in the brain, that precipitate into Alzheimer's or other forms of auto-degenerative diseases such as dementia. Clinical tests will give them more insight into what stages of Alzheimer's benefit the most from the new treatment.

"As of now, we know that there are a fraction of polyphenolic compounds that are able to cross a blockage and reach the brain," said Pasinetti. "That will be the most important aspect in treating Alzheimer's disease."

## **Grapes May Aid In Disease Prevention**

20th Aug 2008

Food product

Grapes have been proven beneficial to human health as they contain disease-preventing nutrients, studies have revealed.

Resveratrol, in particular, is one of grapes' phytonutrients that has been highly investigated and proven to aid grapes in providing cardiovascular benefits and cancer chemopreventive activity.

Independent research, funded by the California Table Grape Commission, has revealed the grapes are also beneficial in fighting diseases such as Alzheimer's and urinary bladder dysfunction.

Findings from these studies ultimately suggest that grapes should be recognized a vital part of fruit and vegetable enriched diets. In addition, they should be recognized for their benefit and effectiveness in disease prevention.

## **Wine for wellness?**

26th Aug 2008

Manila Standard Today

It all started with the so-called "French Paradox"—a series of documented medical studies completed in the 1980s that indicated the reason for the French having much fewer heart attacks than their American counterparts, despite similar rich diets, is the regular intake of wine. Those studies validated the preventive benefit of wine on heart diseases.

This however hardly says that too much wine drinking saves the day. Too much wine volume at a time, as in the case of any alcoholic beverage, is still bad for the coronaries and general health—aside from the obviously impairing effect on one's movement and actions. In the studies conducted, the French take a glass or two of wine with their meals on a daily basis, unlike the Americans, who usually drink in volumes every weekend or on select special occasions. We Filipinos fall into this same habit as the Americans. We tend to overdo drinking, regardless of the kind of alcoholic beverage we take. It is a matter of regularity versus volume. It is proven that regular intake of wine, up to five glasses a day combined with lunch, dinner and post-dinner, can reduce heart attacks by as much as 50 percent according to French scientist Dr. Serge Renaud, who is also the foremost authority in alcohol research. Since wine is normally consumed at mealtimes, rather than beer, hard spirit or other alcoholic beverages, the difference in timing may be the most important factor according to research. One specific study concluded that mealtime alcohol consumption reduced unhealthy alterations in blood circulations that

can occur after eating. Wine can counter the adverse effects of fatty foods during the critical digestive phase.

The magic health ingredient in wine is the flavonoid. These flavonoids have antioxidant and anticlotting properties that fight cardiovascular disease. Flavonoids are found in fruits, vegetables, teas, chocolates and herbs. In the case of wine, grape skins contain significant amounts of flavonoids and other polyphenols. While both red and white wine contain flavonoids, red wine, because of the winemaking process of fermentation with grape skin, is said to contain up to 10 times more flavonoids than their white counterpart. White wine lovers however do not despair. There are white wines that contain high flavonoids too. Some white wines also go through grape skin contact during fermentation similar to a Chardonnay. This is the reason why the Chardonnay varietal wine is normally greenish yellow in hue compared to the very translucent light yellow color seen in most white wines. Rosé wine is in between red and white in flavonoid count. Another health saving polyphenol found in mostly red wine is resveratrol, one of the antioxidants that comes from grape skins and seeds (tannins). Recent studies, though still inconclusive, already show resveratrol to prevent cancer by restricting tumor growth. Experimentations done with laboratory mice already proved this theory. So wine, in particular, red wine, seems to be the perfect antidote for age-related illnesses such as cancer and heart disease.

The health angle is so real that moderate drinking on regular or even daily basis, is highly encouraged.

### **Doctors looking at supplement to treat cancer**

4th Sept 2008

Kold news

There is a natural supplement that may help treat certain cancers.

Many people swear by Resveratrol because of its anti-aging benefits, but researchers at the University of Colorado Cancer Center want to put it to work to fight cancer.

They say Resveratrol may make radiation more effective in treating head and neck cancers.

In lab testing, doctors found the drug fools cancer cells into thinking they're DNA has been damaged, like radiation does, but without destroying normal cells.

Testing in people is still years away.

### **Is Wine What Flows Through the Fountain of Youth?**

16th Sept 2008

Discover

The quest for eternal youth may be as old as human life itself, but the latest elixir to promise longer life—a molecule found in red wine—continues to surprise skeptics who

can't believe it could actually work. In the past five years, that compound, resveratrol, has been shown to slow aging in worms, flies, and mice. Other man-made compounds that work through the same mechanism, affecting a group of proteins called sirtuins, show similar promise.

One true believer is GlaxoSmithKline. Last spring the company paid \$720 million for Sirtris, a biotech start-up that has developed a family of resveratrol-mimicking compounds. "GSK is betting that we have discovered a whole new class of drugs that will treat all or many diseases of aging at once," says Christoph Westphal, CEO and cofounder of Sirtris. Westphal believes these drugs will stave off ailments from cancer to heart disease and says they may be available within a decade.

Resveratrol made headlines in 2006 when Harvard University scientists led by pathologist David Sinclair, the other cofounder of Sirtris, detailed its seemingly miraculous properties. Fat mice fed huge quantities of it lived longer and aged more slowly than normal. But to match the levels of resveratrol given to these mice, a person would have to drink some 1,000 bottles of red wine a day. Sirtris responded by developing a preparation of resveratrol called SRT501, which is five times more easily absorbed into the body than natural resveratrol and about 100 times more potent than wine itself, according to Sinclair. Last winter the company announced that in a trial involving 200 patients with diabetes, those who took the drug improved in glucose tolerance tests. It is a promising result, but one that will take until next year to confirm.

Naturally made in grapes as a reaction to environmental stress (drought, for instance), resveratrol is one of several related chemicals, called polyphenols, that plants produce. In animals, which do not make polyphenols, resveratrol activates cell defenses such as antioxidation, enhanced DNA repair, and increased output from the energy-producing mitochondria in cells, actions that Sinclair theorizes are responsible for the compound's antiaging effects.

These beneficial effects are similar to what happens when mice and other organisms are subject to a near-starvation diet known as caloric restriction (CR). Studies show that CR causes animals to live longer, possibly as an evolutionary mechanism to let them reproduce late in life after a food shortage has ended. Mice live about 35 percent longer on a CR diet, and diseases of aging have a delayed onset. The diet has not yet been proven to have these effects in humans, although we have biochemical pathways similar to those that are implicated in the CR effect in mice.

Studies out this summer from Sinclair and others show that mice given resveratrol have reduced aging of the heart, slower cataract development, and better bone density. It is still unknown whether resveratrol will increase the human life span, but the latest findings have muted some early critics.

"It's still too early to see if this works in humans," says Rafael de Cabo, an investigator at the National Institute on Aging who has collaborated with Sinclair and is testing some of

Sirtris's compounds in mice. "Much needs to be worked out about the mechanisms, but so far the science seems sound."

## **Red Wine Molecule Might Battle MS**

19th Sept 2008

Forbes

Resveratrol, the compound in red wine that previous research has linked to longevity, has shown promise in an animal model of multiple sclerosis.

Mice with the MS-like condition called Wallerian degeneration slow (Wlds) showed an initial weight gain when given resveratrol, researchers at the University of Utah reported Thursday at the World Congress on Treatment and Research in Multiple Sclerosis, in Montreal.

The weight gain occurred in the first two weeks of treatment. A microscopic study of nerve cell tissue at five weeks did not show any positive effect.

"They didn't look at the tissue under the microscope in the first two weeks," said Dr. John Richert, executive vice president for the research and clinical program of the Multiple Sclerosis Society. "Obviously, lots of things can make animals gain weight."

But weight gain of any kind is an encouraging sign in MS treatment, Richert said. "In inflammatory animal models of MS, one of the tell-tale clinical signs of the disease is weight loss. Weight loss often goes hand in hand with loss of neurological function."

The study "poses some questions," Richert said. "Obviously, a lot more needs to be done to see if the weight gain shows a beneficial effect on the disease process. This is evidence that it should be studied further."

Another report at the meeting was on positive results of a human trial of a new drug, laquinimod, which is given in pill form. Developed in the United States, it acts to prevent the body's immune system from attacking nerve cells.

An international study led by Italian physicians had two different doses of laquinimod given to 376 people with MS. "The higher dose was quite effective in reducing the lesions which characterize multiple sclerosis," said study author Dr. Giancarlo Comi, a professor of neurology at the University Vita-Salute and Scientific Institute San Raffaele, in Milan.

The higher dose reduced brain lesions by about 50 percent, Comi said. The people who got it also had a 30 percent reduction in MS flare-ups, which can cause vision loss and lack of coordination severe enough to prevent someone from walking, he said.

There will be a larger study that will recruit more than 1,000 people with MS and will last for two years, Comi said. If all goes well, it could be available for clinical use in three years.

A great advantage of the drug is that it can be taken by mouth, Comi said. "All the available therapies are injectable," he said. "Can you imagine how large an advantage this therapy would be?"

Another noninjectable drug that probably is already being overused against MS has shown promise in an animal study, researchers at Pennsylvania State University reported at the same meeting. It is naltrexone, developed for treatment of drug abuse.

"Thousands of people are taking this drug for MS on the basis of what other people have said," said Dr. Ian S. Zagon, distinguished university professor in neural and behavioral sciences at Penn State. "So, we decided to do animal studies about its efficacy."

The study of animals with an MS-like condition found that low-dose naltrexone helped, but high doses worsened the disease, Zagon said. Penn State is organizing a human trial of low-dose naltrexone in MS, he said. Meanwhile, use of the drug for the condition is not recommended, Zagon said.

## **Resveratrol Improves Health and Longevity in Aging Mice on a High-Calorie Diet**

22nd sept 2008

Natural News

This study was the result of an extensive collaboration between Rafael de Cabo, Ph.D. at the National Institute on Aging (NIA), David A. Sinclair, Ph.D. at Harvard Medical School, and 13 other institutions globally. Their findings were published in the July 3rd, 2008 issue of Cell Metabolism. The researchers showed that resveratrol prevented age- and obesity-related decline in cardiovascular function in older mice, as determined by several parameters. Total cholesterol and inflammation was significantly reduced and blood vessels functioned significantly better in the treated mice. Treated mice also tended to have better bone health, reduced cataract formation, and enhanced balance and motor coordination, whether on a standard or a high-calorie diet. All this from the key ingredient in red wine that keeps bread and cheese-eating Frenchies from getting heart disease.

However, the highlight of the study was about longevity. That's the real promise of resveratrol, but apparently only for mice on a high-calorie diet. The researchers speculated that controlling fatty changes in the blood vessels and liver were contributing factors.

Resveratrol has been shown to enhance longevity in worms and fruit flies, but this current study supports the effect in mammals. In fact, a smaller mouse study was performed in 2006 with a similar outcome. In the prior study, resveratrol produced changes associated

with longer lifespan, including improved insulin function, increased mitochondrial number, and improved motor function. Resveratrol canceled out the ill effects of a high-calorie diet in 144 of 153 activated genes. The data imply that it is possible to improve health simply by taking a pill; not one of those expensive drugs with a host of negative side effects, but one containing a promising antioxidant found in healthy foods and beverages. For most, drinking red wine may be preferable to popping pills. Yet, much more resveratrol can be concentrated in supplements, and it is likely that many glasses of wine will be required for maximum benefits. That may be fine for some, but one day the optimum dose may be added to wine so that one or two servings do the trick.

Granted, these findings are based on mice, not humans. Furthermore, the overweight mice in these studies did not necessarily lose weight. Nevertheless, they were able to enjoy a high-calorie diet and live substantially longer. How can you beat that? Moreover, it is possible to be overweight and still be relatively healthy. Given the current obesity epidemic among humans, what a difference resveratrol could make. It does not replace good, old-fashioned discipline in diet and exercise, but it would be a great start to help reduce health care costs under the current conditions.

There are still many questions remaining about safety, dosing and clinical efficacy before resveratrol can be recommended for human use. That being said, let's hope that Big Pharma doesn't continue to stall awareness of health issues for the sake of profit, or to find a way to squelch this research altogether.

## **Longevity Drug May Protect Against Radiation**

24th Sept 2008

Wired

The longevity drug resveratrol may also protect against radiation damage.

Next we'll find out that it cleans carpets, too.

Resveratrol has shown promise in extending the healthy lifespans of lab animals. It's now in clinical trials for treating diabetes -- and if approved, it could be the first longevity drug.

Now University of Pittsburgh oncologist Joel Greenberger has found that resveratrol protects against radiation damage in mice. If it can do the same in humans, resveratrol could also be the first anti-radiation drug -- and it's non-toxic to boot.

"The research was designed to defend against radiation terrorism. People exposed to radiation from a terrorist attack could take it," said Greenberger. He said that it might also protect against other forms of radiation damage.

Resveratrol targets a gene responsible for regulating mitochondria, the cellular power generators that provide bodies with chemical energy. The process produces so-called free radicals, a type of oxygen molecule that damages DNA.

The same mitochondrial rejuvenation that improves animal health is also responsible for its radiation-protective effects.

Greenberger did make a slight chemical tweak: he acetylated the resveratrol, extending its half-life.

Scientists have yet to discover a drug that protects against radiation.

Greenberger's research was reported at the American Society for Therapeutic Radiology and Oncology annual meeting on Sep. 23.

## **Plant Antioxidant, Resveratrol Found to Possess Radioprotective Properties**

30th Sept 2008

Medinews Direct

Resveratrol, a polyphenolic phytoalexin, is extensively studied for its anticancer, antiviral, anti-inflammatory, and neuroprotective properties. Now, scientists from the University of Pittsburgh School of Medicine, Pennsylvania have found that acetylated resveratrol may also provide protection against hazardous radiation exposure. It has the potential to be used for the prevention of radiation spills and radiation hazards associated with radiological terrorism, diagnostic procedures, and therapeutic interventions. The details of the study were presented at the 50th Annual Meeting of American Society for Therapeutic Radiology and Oncology (ASTRO), held at Boston from September 21-25, 2008.

Joel S Greenberger, lead scientist from the University of Pittsburgh Cancer Institute, and colleagues, conducted the study on mouse models to determine the effects of both dietary component resveratrol and acetylated moiety, on cells following radiation exposure. Murine cells from the hematopoietic progenitor cell line (32D cl 3) were irradiated with doses ranging from 0 to 8 gray (Gy) after the cells were incubated with resveratrol or acetylated resveratrol (10  $\mu$ M) for 1 hour. Linear quadratic and single-hit, multi-target models were used to analyze the data. In vivo experiments were also performed on female C57BL/6NHsd mice by administering intraperitoneal injections of resveratrol either, 10 minutes before or after total body irradiation (LD50/30 dose of 9.5 Gy). It was noted that resveratrol incubated cells, prior to the radiation exposure, showed an enhanced resistance to radiation. Also, mice injected with acetylated resveratrol, in comparison with control irradiated mice, had increased survival rate at 10 and 25 mg/kg; however, survival was not improved in mice injected with resveratrol. Results also revealed that resveratrol or its acetylated form failed to improve the survival when administered after irradiation. Hence, it was concluded that acetylated resveratrol may be radioprotective if administered before irradiation. Further research is being carried out to ascertain the above results in clinical use.

In similar study, Carsten, et al. (Radiation Research, 2008) investigated the radioprotective activity of oral resveratrol on mouse bone marrow cells by examining the frequencies of chromosomal aberrations post radiation. Two days prior to exposing the cells for radiation, oral administration of resveratrol (100mg/kg daily) was initiated, and bone marrow was harvested on 1 and 30 days after a single dose of Gy whole-body gamma radiation. The scientists found a decrease in the mean total chromosomal aberration frequency in the resveratrol-radiation group when compared to the radiation-only group. Considering the findings, it was suggested that resveratrol has widespread applications as a radioprotector.

Radiotherapy, a common treatment modality for malignant cancers, is associated with several side effects such as damage to the epithelial surfaces, soft tissue edema, xerostomia, xerophthalmia, hair loss, infertility, etc. The cumulative effect of radiation exposure may also enhance the risk of cancer development. Radiation damages are also caused by accidental spilling of radioactive materials, use of electromagnetic waves like x-rays for medical purposes and ultraviolet rays of sunlight, and nuclear explosions during wars.

Resveratrol (3,5,4'-trihydroxystilbene), an antioxidant naturally produced by plants (eucalyptus, spruce, and lily) in response to pathogenic invasions from fungi and bacteria. It is largely found in grapes, wine, berries of *Vaccinium* species such as blueberries and cranberries. Previous studies have proposed that resveratrol inhibits the development of cancer, and decreases the incidence of coronary heart disease and atherosclerosis by altering the platelet aggregation. It is also known to reduce obesity and has shown promise in extending the lifespan of lab animals.

Currently, as there are no drugs in the market that counteract radiation exposure, the discovery of the radioprotective capacity of resveratrol may be a major breakthrough for preventing health hazards caused due to accidental spills, radiotherapy during cancer treatment, as well as to combat radiological terrorism.

## **New Research Unveiled on Molecular Targets and Skin Health**

6th Oct 2008

SkinINC

Research conducted by U.S. scientists is said to have lifted the lid on how molecular targets can influence skin health and treatment. The research findings were published today in the *Journal of Investigative Dermatology*, in a paper entitled "SIRT1 Promotes Differentiation of Normal Human Keratinocytes."

According to the scientists, the preliminary results point to the fact that a better understanding of these mechanisms could lead them to better understand the mechanisms of hyperproliferation and underdifferentiation—characteristics associated with conditions such as psoriasis.

Identifying molecular mechanisms

The team behind the research consisted of specialists from the company Genstruct, which is focused on identifying molecular mechanisms for diagnostic purposes, and was supported by the Estee Lauder fellowship and scientists from the Massachusetts Institute of Technology. "This project represents the full cycle of systems biology, from experiment design, execution, data collection hypothesis generation and model validation," said Dr. Joseph Loureiro, senior and co-corresponding author of the article and R&D project leader at Genstruct.

Loureiro's team conducted its research around Estee Lauder's ReNutriv Ultimate Youth Creme, which contains the company's Resveratrate formulation, which is said to be a time released version of Resveratrol, a substance that attacks pathogens and bacteria, "Using the Causal Network Modeling (CNM) Platform, we were able to identify the mechanisms controlled by SIRT1 in skin cells, and that can be regulated by Resveratrol. This is the biology that Estee Lauder was most interested in understanding more clearly," Loureiro said.

According to Louriero and his team, the CNM helped to identify the mechanisms for SIRT1—proteins that contribute to skin cell regulation—in keratinocytes, and this was validated in the labs. This process helped identify the molecular networks regulated by SIRT1, which in turn helps extend the reach of sirtuins and how they can be incorporated into treatments to improve skin health, the scientists report.

## **Resveratrol Found to Halt Growth of Pancreatic Cancer Cells**

6th Oct 2008

Natural News

Recent research suggests that the antioxidant resveratrol, which naturally occurs in grape skins, can weaken pancreatic cancer cells and increase their vulnerability to chemotherapy.

"Resveratrol seems to have a therapeutic gain by making tumor cells more sensitive to radiation and making normal tissue less sensitive," said lead researcher Paul Okunieff, chief of radiation oncology at the University of Rochester Medical Center.

In a study published in the journal *Advances in Experimental Medicine and Biology*, Okunieff and colleagues treated a group of pancreatic cancer cells with 50 mg of resveratrol, then iodized them to simulate the action of chemotherapy. Another group of cancer cells was iodized without undergoing any resveratrol treatment.

Pancreatic cancer has long been known to be particularly resistant to chemotherapy. The researchers discovered that because the pancreas is continually producing digestive enzymes and pumping them into the duodenum, these enzymes actually flush away chemotherapy chemicals before they can have much impact.

But in pancreatic cancer cells that had been treated with resveratrol, the cell membrane proteins responsible for this flushing had their functioning hampered. In addition to

becoming more sensitive to chemotherapy, the cells also became more likely to undergo programmed death (apoptosis) due to the increased production of reactive oxygen species.

While the reason for the decreased pumping action was not clear, it may have been a side effect of yet a third observed effect of resveratrol treatment: The mitochondria of the cancer cells was damaged, with its membranes depolarized. Because mitochondria are the energy source of the cell, damaged mitochondria hampers the cell's general ability to function, including its ability to flush out chemotherapy drugs.

As a naturally occurring ingredient of red wine, resveratrol has drawn much attention from researchers investigating whether it might be responsible for wine's well-documented health benefits. Like all antioxidants, resveratrol is known to remove free radicals from the blood. Free radicals are known to be linked with cancer, inflammation related to cardiovascular disease, and the effects of aging.

## **Red Wine and Lung Cancer**

7th Oct 2008

Medical breakthroughs

Previous studies have shown antioxidants in red wine protect against heart disease, breast cancer and stroke. Now, you may be able to add lung cancer to that list.

Researchers tested the effects of beer, red wine, white wine and liquor consumption on lung cancer risk. Data showed an average two percent lower lung cancer risk associated with each glass of red wine consumed per day. The biggest risk reduction was among smokers who drank one to two glasses of red wine per day; their lung cancer risk was reduced 60 percent. However, researchers caution these men still face higher lung cancer risk than do non-smokers.

“Red wine is known to contain high levels of antioxidants,” Chun Chao, Ph.D., a researcher assistant at Kaiser Permanente Department of Research and Evaluation. “There is a compound called resveratrol that is very rich in red wine because it is derived from the grape skin. This compound has shown significant health benefits in preclinical studies.”

Dr. Chao cautions their findings should not be construed to recommend heavy alcohol consumption.

SOURCE: Cancer Epidemiology, Biomarkers & Prevention, 2008

## **New findings may improve treatment of inherited breast cancer**

9th Oct 2008

EurekaAlert

Scientists have identified some of the elusive downstream molecules that play a critical role in the development and progression of familial breast cancer. The research, published by Cell Press in the October 10th issue of the journal *Molecular Cell*, also identifies a compound found in grapes and red wine as an excellent candidate for treatment of some forms of breast cancer.

About 8% of breast cancer cases are caused by mutations in tumor suppressor genes, such as breast cancer associated gene-1 (BRCA1). BRCA1 is the most frequently mutated tumor suppressor gene found in inherited breast cancers and BRCA1 mutation carriers have a 50-80% risk of developing breast cancer by age 70. "Although work with animal models of BRCA1 mutation has provided some insight into the many biological processes linked with BRCA1, very little is known about the downstream mediators of BRCA1 function in tumor suppression," says lead study author Dr. Chu-Xia Deng from the Genetics of Development and Diseases Branch at the National Institutes of Health.

Dr. Deng and colleagues were interested in investigating the relationship among BRCA1, SIRT1 and Survivin. SIRT1 is a protein and histone deacetylase involved in numerous critical cell processes including metabolism, DNA repair and programmed cell death, known as apoptosis. Although SIRT1 has been implicated in tumorigenesis, no concrete role in cancer initiation or progression has been identified. Survivin is an apoptosis inhibitor that is dramatically elevated in many types of tumors. Research has suggested that Survivin may serve to maintain the tumor and promote growth.

The researchers found that BRCA1 functioned as a tumor suppressor by maintaining SIRT1 expression, which in turn inhibited Survivin expression. When BRCA1 was not functioning properly, SIRT levels decreased and Survivin levels increased, allowing BRCA1-deficient cells to overcome apoptosis and undergo malignant transformation.

They went on to show that the compound resveratrol strongly inhibited BRCA1-mutant tumor growth in cultured cells and animal models. Resveratrol is an important constituent of traditional Japanese and Chinese medicine that has recently been shown to inhibit some types of cancer by inducing apoptosis with very little associated toxicity. In the current paper, resveratrol enhanced SIRT1 activity, this leading to reduced Survivin expression and subsequent apoptosis of BRCA1 deficient cancer cells.

These findings identify SIRT1 and Survivin as downstream mediators of BRCA1-regulated tumor suppression and identify resveratrol as a potent inhibitor of BRCA1-mutant cancer cells. "Resveratrol may serve as an excellent compound for targeted therapy for BRCA1 associated breast cancers," says Dr. Deng.

## **Resveratrol Prevents Fat Accumulation In Livers Of 'Alcoholic' Mice**

15th Oct 2008

Science Daily

The accumulation of fat in the liver as a result of chronic alcohol consumption could be prevented by consuming resveratrol, according to a new study with mice. The research

found that resveratrol reduced the amount of fat produced in the liver of mice fed alcohol and, at the same time, increased the rate at which fat within the liver is broken down. Chronic alcohol consumption causes fat to accumulate and can lead to liver diseases, including cirrhosis and fibrosis of the liver. It can also result in liver failure. The study points to resveratrol as a possible treatment for alcoholic fatty liver disease, and as a way to prevent the disease in those who are at risk, but have not developed it.

Resveratrol is present in grapes, peanuts, berries and in red wine. Other research with mice has suggested resveratrol may have anti-cancer and anti-inflammatory properties. There is also evidence that it has cardiovascular benefits. However, these findings have not been extended to humans.

The study was carried out by Joanne M. Ajmo, Xiaomei Liang, Christopher Q. Rogers, Brandi Pennock and Min You, all of the University of South Florida Health Sciences Center, Tampa.

Activates cell signalers

The study builds on previous research, which suggests that alcohol inhibits two molecules that play a role in cell signaling and the breakdown of fats in the liver: AMP-activated protein kinase (AMPK) and sirtuin 1 (SIRT1). When alcohol inactivates AMPK and SIRT1, it allows fat to accumulate. Resveratrol does the opposite -- activating AMPK and SIRT1, and helping to clear out fat.

In this study, the authors wanted to find out more about how this happens, at the molecular level. They divided mice into groups and fed all of them a low-fat diet. Some mice had resveratrol in their diet, some had resveratrol plus ethanol (alcohol), some had ethanol alone and some had neither ethanol nor resveratrol. The researchers used two different dose levels of resveratrol. At the end of the experiment, they examined the livers of the mice.

The researchers found, as they had expected, that resveratrol treatment increased the expression of SIRT1 and stimulated the activity of AMPK in the livers of mice fed alcohol. They further found that the increased expression of SIRT1 and AMPK led to:

- \* Reduction of sterol regulatory element binding protein (SREBP-1)
- \* Activation of peroxisome proliferator-activated receptor gamma co-activator alpha (PGC-1 $\alpha$ )
- \* Elevation of circulating adiponectin, a hormone produced by fat cells, which helps control obesity
- \* Enhanced expression of adiponectin receptors in the liver, which increases the effectiveness of the circulating adiponectin.

The findings suggest that resveratrol prevents alcoholic fatty liver by coordinating molecules that control fat metabolism. This prevents accumulation of fat in the mouse liver by both reducing the production of fat and burning off the fat that is there.

Interestingly, the combination of alcohol with resveratrol appears to enhance the positive effects of resveratrol, said Dr. You, the study's senior author.

"Our study suggests that resveratrol may serve as a promising agent for preventing or treating human alcoholic fatty liver disease," the authors concluded.

### **Resveratrol prevents fatty liver in mice**

15th Oct 2008

UPI.com

Resveratrol found in grapes, red wine and peanuts, prevents alcoholic fatty liver in mice, U.S. researchers have determined.

Chronic alcohol consumption causes fat to accumulate in the liver and can lead to cirrhosis and liver failure.

Joanne M. Ajmo, Xiaomei Liang, Christopher Q. Rogers, Brandi Pennock and Min You, all of the University of South Florida Health Sciences Center in Tampa, Fla., divided mice into groups and fed all of them a low-fat diet. Some mice had resveratrol in their diet, some had resveratrol plus alcohol, some had alcohol alone and some had neither alcohol nor resveratrol.

The researchers found that resveratrol treatment increased the expression of SIRT1 and stimulated the activity of AMPK -- molecules that help in cell signaling and the breakdown of fats -- in the livers of mice fed alcohol.

The findings, published in American Journal of Physiology-Gastrointestinal and Liver Physiology, suggest that resveratrol prevents alcoholic fatty liver by coordinating molecules that control fat metabolism. This prevents accumulation of fat in the mouse liver by both reducing the production of fat and burning off the fat that is there, the study said. Interestingly, the combination of alcohol with resveratrol appears to enhance the positive effects of resveratrol, the researchers said.

### **Fountain of youth in sight**

20th Oct 2008

McGill Daily

Discoveries in the drug realm are changing the world – and maybe extending your life. Pharmaceutical company Sirtris claims to have inadvertently discovered the fountain of youth while testing a compound intended to cure diabetes.

Sirtris's website claims the company is "creating revolutionary medicines for diseases of aging" and according to S. Jay Olshansky, co-author of The Quest for Immortality, they may be right.

"This has the potential to be a blockbuster drug," Olshansky said.

A compound in red wine that is believed to increase lifespan inspired testers to create the drug. The compound, resveratrol, is found in the skin of grapes, and tampers with sirtuins, proteins that regulate the body's responses to stress by causing it to enter an energy-saving mode, which some believe can increase lifespan. The energy-saving mode triggered by resveratrol is identical to that achieved by low-calorie diets – the only proven way to increase maximum lifespan – and leads to many healthy body changes, including lowered cholesterol and blood pressure. The biology behind the longevity that comes with restricting calories is largely unknown.

Although resveratrol has been seen to increase lifespan by over 50 per cent for yeast and fish, the effects in humans may not be as advantageous. Because humans break down resveratrol so slowly, they would need to eat a few kilograms per day to enjoy any benefit.

Sirtris has found a way around this obstacle, though, by modifying resveratrol so that the body does not break it down.

This modified version of resveratrol, called SRT501, will initially and primarily be marketed as a cure for diabetes, despite its potential to combat other diseases of aging.

According to Dr. Leonard P. Guarente, the drug will likely have many beneficial effects in humans.

“I think it's clear that these sirtuin-based drugs have a lot of beneficial effects in animal models. So, it would be astonishing if they did not have a lot of applicability to human health. I think that's on the horizon, right away with this diabetes drug,” Guarente said.

SRT501 is already in phase two clinical trials for type II diabetes, and is beginning trials as a cancer medication. Cardiovascular and metabolic disease medications are not far behind, and SRT501 should hit the market in five to ten years.

SRT501 functions in a unique way; it will prolong the number of healthy, middle years of life, rather than the time spent in nursing homes, as many medical breakthroughs involving diseases of the elderly do.

Although no one yet knows exactly how many middle years SRT501 will provide, popular studies estimate a decade.

If SRT501 does significantly extend life and cure diseases of aging, the populations of countries with high life expectancies will grow in size and productivity. Guarente speculated that the drug might also have a social upshot.

“I think it's going to help to have people with the wisdom and experience of a lifetime staying healthier longer,” he said.

Olshansky, too, noted that increasing lifespans would benefit society.

“The postponing of bodily deterioration will have enormous social, economical, and health dividends for today’s generations and for future generations,” he said.

But Michelle Dipp, director of corporate development at Sirtris, cautioned such optimism, asserting that at first SRT501 will only be available as a treatment option for diabetes.

“SRT501 will be used to treat diseases of aging. It will not be marketed as an anti-aging drug,” she said.

Yet Guarente speculated that prudent people who do not have diabetes will use the SRT501 once it hits the market provided that it lacks side effects.

“If it looks good in phase two, I’m going to start taking it. Preventatively. Why not?”

## **University researchers developing cancer-fighting beer**

21st Oct 2008

ComputerWorld

Have you ever picked up a cold, frosty beer on a hot summer's day and thought that it simply couldn't get any better?

Well, you may have to think again.

A team of researchers at Rice University in Houston is working to create a beer that could fight cancer and heart disease. Taylor Stevenson, a member of the six-student research team and a junior at Rice, said the team is using genetic engineering to create a beer that includes resveratrol, the disease-fighting chemical that's been found in red wine.

Scientists at the University of Wisconsin in June had called resveratrol, which is a natural component of grapes, pomegranates and red wine, a key reason for the so-called French Paradox -- the observation that French people have lower rates of heart disease despite a cuisine known for its cream sauces and decadent cheeses, all loaded with heart-clogging saturated fats.

The Wisconsin researchers had noted that adding small doses of resveratrol to the diet of middle-aged mice significantly slows their aging and keeps their hearts healthy. And they added that giving high doses to invertebrates extends their life spans, and high doses also stave off premature death in mice fed a high-fat diet.

Stevenson said that the Rice research group, most of the members of which aren't old enough to legally drink alcoholic beverages, came up with the idea of adding resveratrol to beer during a casual conversation about potential projects to undertake. "The idea is that it may have greater effects [in beer than in wine]," he added. "The amount of red wine you'd need to drink to get the same results they get with rats in labs is about half a bottle a day."

He explained that the amount of resveratrol in wine varies from bottle to bottle, since it depends on growing conditions for the grapes and other variables. The researchers felt they could design a beer with higher and more consistent concentrations of the cancer-fighting chemical.

The students, using their own Dell, Lenovo ThinkPad and Gateway laptops, are now in the process of developing a genetically modified strain of yeast that will ferment beer and produce resveratrol at the same time. Stevenson said that as the research advances, the team will need to use one of Rice University's computer grids to run compute-heavy genetic models.

The Rice effort is the latest in a series of projects that use technology to find cures to major health concerns like cancer and heart disease.

In August, scientists at Stanford University announced that they have found a way to use nanotechnology to have chemotherapy drugs target only cancer cells, keeping healthy tissue safe from the treatment's toxic effects.

And in July, researchers at the University of California, San Diego, reported that they had discovered a way to use nanotechnology-based "smart bombs" to streamline lower doses of chemotherapy treatments to cancerous tumors, cutting down on the cancer's ability to spread throughout the body.

Researchers at the University of Texas at Austin announced in May that they had developed a silicon chip that they say can more quickly and accurately diagnose heart attacks.

Stevenson noted that the lab strains of yeast the team used initially certainly wouldn't produce a tasty beer. The taste issue is why the team this summer turned to the Saint Arnold Brewing Co., a craft brewery in Houston, for some good beer-making yeast to use. In general, the addition of the resveratrol shouldn't affect the taste of the beer, since the chemical is odorless and tasteless, he said.

"We're now putting these genes into the yeast," he added. "We're fairly confident that it will work because all the components have worked separately."

Stevenson said the modified yeast strain could one day be sold to breweries where beverage companies could make their own disease-fighting beer. He noted that the research and development phase of the effort could take five years.

The research team is looking to enter their so-called BioBeer in the annual International Genetically Engineered Machine competition next month in Cambridge, Mass.

## **Cold and Frosty: Cancer-Fighting Beer to Use Resveratrol**

28th Oct 2008

The National Ledger

A group of researchers are developing a beer that could reduce the risk of cancer. Researchers at Rice University are trying to genetically engineer some brewing yeast in order to create beer loaded with resveratrol. Hops talk reports that "Resveratrol is getting a lot of press lately. It is the miracle compound that apparently allows the French to enjoy a cuisine loaded with saturated fats and yet avoid heart disease. Its cancer-fighting properties have also been documented."

The researchers consist of six under grads from Rice University and they are working on genetically budding in resveratrol, which is an antibiotic that is a natural component of Grapes, into the ingredients that make up Beer.

The Cancer-fighting and anti-ageing properties that Red Wine gets are through the presence of Resveratrol. The team believes that producing Beer with higher and more consistent concentrations of Resveratrol will create a frosty adult beverage with even better preventive powers.

According to Fox News, researchers hope the beer will have higher and more consistent concentrations of the cancer-fighting chemical because it won't be dependent on such factors as grape quality and growing conditions.

## **Might Resveratrol Cut Hereditary Breast Cancer Risk?**

31st Oct 2008

FuturePundit

Resveratrol (which is sold over-the-counter at least in some countries) might work against breast cancer that is caused by hereditary mutation of the BRCA1 gene.

Dr. Deng and colleagues were interested in investigating the relationship among BRCA1, SIRT1 and Survivin. SIRT1 is a protein and histone deacetylase involved in numerous critical cell processes including metabolism, DNA repair and programmed cell death, known as apoptosis. Although SIRT1 has been implicated in tumorigenesis, no concrete role in cancer initiation or progression has been identified. Survivin is an apoptosis inhibitor that is dramatically elevated in many types of tumors. Research has suggested that Survivin may serve to maintain the tumor and promote growth.

The researchers found that BRCA1 functioned as a tumor suppressor by maintaining SIRT1 expression, which in turn inhibited Survivin expression. When BRCA1 was not functioning properly, SIRT levels decreased and Survivin levels increased, allowing BRCA1-deficient cells to overcome apoptosis and undergo malignant transformation.

They went on to show that the compound resveratrol strongly inhibited BRCA1-mutant tumor growth in cultured cells and animal models. Resveratrol is an important constituent of traditional Japanese and Chinese medicine that has recently been shown to inhibit some types of cancer by inducing apoptosis with very little associated toxicity. In the current paper, resveratrol enhanced SIRT1 activity, this leading to reduced Survivin expression and subsequent apoptosis of BRCA1 deficient cancer cells.

These findings identify SIRT1 and Survivin as downstream mediators of BRCA1-regulated tumor suppression and identify resveratrol as a potent inhibitor of BRCA1-mutant cancer cells. "Resveratrol may serve as an excellent compound for targeted therapy for BRCA1 associated breast cancers," says Dr. Deng.

If resveratrol really works in the way described there is a substantial chance that resveratrol might decrease the odds of getting breast cancer in the first place - especially among women who have the BRCA1 mutation that increases the odds of getting breast cancer. Resveratrol appears to substitute for properly formed BRCA1 and enhance SIRT1 which lowers the expression of Survivin. Survivin helps keep cells alive. So less Survivin causes more cancer cells to commit suicide.

## **Next-Generation Longevity Drug Works Mouse Wonders**

4th Nov 2008

Wired

A potential longevity-enhancing drug has passed its final animal testing challenge, pushing closer to reality the dream of all-purpose drugs against diseases of aging.

Mice given the new drug, called SRT1720, gorged on high-fat food for four months without gaining weight or developing diabetes, and ran twice as far on a treadmill as their control-group counterparts. Similar drugs are expected to follow down the pipeline.

"If you look at all the things that have fundamentally changed medicine in the last 150 years, washing hands would be one, and antibiotics another. This could be the third," said study co-author Philip Lambert, a pharmacologist at Sirtris Pharmaceuticals, the drug's developer. "If you could keep your health for another 10 or 15 years, that would be amazing."

SRT1720 activates one of several enzymes that regulate the function of mitochondria — cellular power generators that convert glucose into chemical energy. The wearing down of these generators has been linked to heart disease, Alzheimer's disease, diabetes, cancer and other age-related afflictions.

That same enzyme is also targeted by resveratrol, a naturally occurring compound that reduces age-related diseases in lab animals and is already used by longevity enthusiasts. Researchers at Sirtris showed last year that synthetic drugs that activate the enzyme produced the same cell-level changes as resveratrol, but the tests only lasted for two weeks. The latest study lasted four months, suggesting that SRT1720 — and perhaps the class of enzyme activators expected to follow — are for real.

"This shows you can make drugs that work even better than resveratrol," said David Sinclair, co-founder of Sirtris, who compared the finding to the synthesis of antibiotics inspired by early fungal components. "Now we've got human-designed synthetic molecules. We're not talking about plant extracts anymore."

Rafael de Cabo, a National Institute on Aging gerontologist who is researching SRT1720 but was not involved in the study, published today in *Cell Metabolism*, agreed with Sinclair's assessment, though he cautioned against premature celebration.

"From rodents to humans is a long, long process," he said. "We've demonstrated this in cells, and in mice. Now we need to move to the next level — primates or humans."

Resveratrol is currently in clinical trials as a diabetes drug, and could be joined next year by SRT1720, said Lambert.

The drug's side effects aren't yet apparent, but resveratrol has proven safe in animals and — anecdotally, at least — in humans. Since SRT1720 works at doses 1000 times lower than resveratrol, said Lambert, it should prove even safer if effective.

He noted that the blood sugar-lowering effects from SRT1720 observed in the study were present in mice on a high-fat diet, but not in mice on standard fare. This suggests that SRT1720 won't produce hypoglycemia, a dangerous dip in blood sugar that is a common side effect of diabetes treatments.

If SRT1720 and resveratrol are approved for diabetes, they will likely be used off-label to treat other diseases, from cancer to Parkinson's, that become more common with age and may involve age-related mitochondrial degeneration and the resulting metabolic disarray of key tissues and organs.

That model of disease is not yet the consensus in the medical community, which views those diseases as having multiple causes rather than a common root, and has generally ignored mitochondrial factors in its search for cures.

"The study again indicates that it's metabolic function that regulates diabetes and obesity, rather than changes in the activity of structural genes," said University of California, Irvine mitochondrial therapy pioneer Douglas Wallace, referring to genes that code for non-mitochondrial functions. "You have to look at tissue metabolism to understand the disease biology. The traditional mechanism of looking at a few nuclear gene processes is not going to be productive."

As for longevity-enhancing drugs, said Wallace, "there will be others."

## **A new weapon in the fight against obesity and diabetes**

4th Nov 2008

EurekaAlert

A study appearing November 5 in the journal *Cell Metabolism* demonstrates that a synthetic new chemical entity protects against diet-induced obesity, improves glucose tolerance and insulin sensitivity and enhances exercise endurance by enhancing fat utilization in certain target tissues.

The new chemical entity was developed by Sirtris, a GSK company, and the research study was led by EPFL professor Johan Auwerx, MD.

Reducing calorie consumption by about 20% has been shown to slow down the aging process, improve endurance and protect against diet-induced obesity and metabolic diseases such as diabetes. A year ago, researchers demonstrated that these metabolic benefits can also occur with large doses of resveratrol, a substance naturally occurring in red wine. Researchers hypothesized that these beneficial effects result from activation of SIRT1, an enzyme that is involved in regulating certain key cellular processes, notably the efficiency and number of mitochondria – the energy powerhouses of our cells.

Because dietary management and exercise rarely succeed by themselves in curbing obesity and associated metabolic disorders, interest has increased in using the SIRT1 pathway as a target for possible pharmacological intervention.

The new chemical entity announced today in Cell Metabolism was specifically designed to activate the SIRT1 pathway and assess its role in the beneficial metabolic effects found in calorie restriction and high doses of resveratrol. The new research verified the hypothesis, demonstrating that activating the SIRT1 pathway protects from diet-induced obesity and its negative metabolic consequences by primarily promoting fat consumption in skeletal muscle, liver, and brown adipose tissue.

"These results show that new synthetic SIRT1 activators can reproduce the positive metabolic effects that were previously demonstrated using resveratrol, a naturally occurring SIRT1 activator found in red wine," stated Auwerx, lead author of the paper. "But unlike resveratrol, these new chemical entities target only the SIRT1 pathway, making them more selective and potent for achieving these metabolic benefits."

To assess the new SIRT1 activator on metabolic function, mice were fed a high-fat diet over a period of 15 weeks, while receiving average drug exposures of 100 to 500 mg/kg/day. Mice on a high-fat diet treated with the higher drug dose did not become obese, and their triglyceride, cholesterol, fasting blood glucose and insulin levels were all reduced. Furthermore, they were able to run approximately twice the distance as control animals in an endurance exercise test.

### **New drug mimics low-cal diet, helps keep weight off**

4th Nov 2008

CTV.ca

Keeping the extra pounds at bay may soon be as easy as popping a pill, suggests a new study, which found that a new drug may protect against obesity and enhance endurance during exercise by burning more fat.

Researchers found that between 100 and 500 mg per day of the drug, known as SRT1720, kept mice from becoming obese even when they were fed a high-fat diet.

As well, the mice that were given the new drug were able to run about twice the distance during an endurance test compared to mice who did not receive the drug.

The treated mice also had lower cholesterol and triglyceride levels, which are markers of heart disease risk, as well as lower insulin and fasting blood glucose levels, which are indicators of diabetes risk.

The findings are published in the journal *Cell Metabolism*.

Researchers have become increasingly interested in exploring how a drug might offer protection against obesity.

Recent research has shown that reducing calorie consumption by about 20 per cent can both improve endurance and protect against diet-induced obesity.

Researchers have also found that large doses of resveratrol, a substance found in red wine, can have the same effect.

Scientists believe that in both cases, an enzyme called SIRT1 is activated. Among other tasks, SIRT1 regulates the number and efficiency of mitochondria, which provide the body's cells with energy.

Therefore, researchers from Sirtris Pharmaceuticals decided to test whether a drug could activate SIRT1 and mimic the effects of a healthy diet and high doses of resveratrol in the body.

They found that stimulating SIRT1 sends the body into an accelerated fat-burning mode, which the body normally only uses when its energy stores are low, such as when its being fed a low-calorie diet.

"These results show that new synthetic SIRT1 activators can reproduce the positive metabolic effects that were previously demonstrated using resveratrol, a naturally occurring SIRT1 activator found in red wine," lead study author Dr. Johan Auwerx, a professor at the Ecole Polytechnique Federale de Lausanne, said in a statement.

"But unlike resveratrol, these new chemical entities target only the SIRT1 pathway, making them more selective and potent for achieving these metabolic benefits."

The good news is that the researchers did not report any serious side effects. However, they will conduct further studies to confirm these findings.

The bad news is there is no indication when the drug might arrive on store shelves.

## **Drug 'tricks body to lose weight'**

5th Nov 2008

BBC news

French scientists say they have found a drug that tricks the body into burning off fat even when on a high-fat diet.

The University of Louis Pasteur team found the drug protected mice against weight gain and insulin resistance.

The drug SRT1720 - a chemical cousin of red wine extract resveratrol - targets the protein SIRT1, which is thought to combat ageing, Cell Metabolism reports.

UK obesity experts said new drug treatments were needed but should be used alongside lifestyle changes.

About a quarter of men and a third of women in the UK are overweight, according to government statistics.

A change in diet and an increase in physical exercise can shift excess weight, but can be hard for many to maintain.

With the removal of the anti-obesity pill rimonabant, also known as Acomplia, from the market amid safety concerns, fewer drug options exist.

Potent drug

The French team from the University Louis Pasteur became interested in the SIRT1 protein after earlier studies showing resveratrol countered some effects of a high-calorie diet via SIRT1.

But tests in mice suggested gallons of wine would be necessary for humans to stand a chance of getting the same benefits.

The scientists turned their attention to creating a more potent drug that would specifically target SIRT1.

They found that a low dose of SRT1720 partially protected mice from gaining weight on a high-fat diet after 10 weeks of treatment.

The drug worked by shifting the metabolism to a fat-burning mode that normally takes over only when energy levels are low.

At higher doses, the drug completely prevented weight gain. It also improved the rodents' blood sugar tolerance and insulin sensitivity, which are important for warding off diabetes.

The mice showed no sign of side effects. However, the scientists say further studies are needed to test the drug's safety and efficacy before it could be used in humans.

Other scientists are investigating SIRT1 activators similar to SRT1720 developed by Sirtris Pharmaceuticals.

Professor Stephen Bloom, who has been researching obesity at Imperial College London, said: "This sounds interesting but is terribly early.

"We do need new treatments for obesity, particularly as there are 1,000 deaths a week in the UK from obesity."

Prof Ian Broom, of the Centre for Obesity Research and Epidemiology at The Robert Gordon University, said: "Research in this area is to be welcomed as an additional route of combating the obesity epidemic and associated comorbid disease."

He added that any such drug should be used alongside dietary and lifestyle changes to tackle obesity.

### **Scientists Develop Red Wine Pill To Fight Obesity, Diabetes**

5th Nov 2008

Chattahbox

Washington (ChattahBox) - French scientists from the University of Louis Pasteur have developed a new red wine pill that helps fight both obesity, as well as diabetes.

The new red wine pill works very similar to how resveratrol functions in red wine.

The pill is called SRT1720, and is effective in fighting both obesity as well as diabetes.

Studies done so far on mice have found the pill to be a great tool to fight obesity and spark weight loss.

Researchers feel this could be used along with a better diet and exercise program to reduce obesity in the UK and U.S.

The pill is more potent than resveratrol, as one pill is equal to drinking gallons of wine.

A 10-week study on mice found that it helped to get metabolism to burn more fat quickly, and also helped with blood sugar levels.

A study may soon be conducted to see how it will impact humans.

### **New drug will combat obesity on a high-calorie diet**

6th Nov 2008

Money Times

United Kingdom, November 6: A drug for you to keep extra pounds off, while you savor all delicacies may soon be a reality, for French scientists claim discovering a drug that sets the body on a weight loss mode irrespective of the diet pattern.

Resveratrol, found in red wine and known to fight weight-gain, is chemical cousin of this new found drug named SRT1720. It was found to control weight and insulin levels in mice during its trials at the University of Louis Pasteur.

According to Cell Metabolism reports, a protein named SIRT1 that fights aging is targeted by the drug.

Obesity is a growing problem in UK and government statistics show that one-third of women and one-fourth men are obese. Obesity experts from UK commented that lifestyle changes are crucial besides the obesity drug.

But it is tough to keep the excess weight away from coming back but exercising and diet alone while people do not have more choices in drugs to fight obesity after rimonabant was pulled off the shelves following safety concerns.

The team from University of Louis Pasteur, initially studied effects of resveratrol on mice and found it effective against a high-fat diet but they inferred that humans may require huge quantity of red wine to fight the accumulated fats. It was then that the team thought of concentrating on a drug much more potent than resveratrol.

When tried on mice, it was observed that the drug cuts down weight-gain within 10 weeks of treatment, while the mice were on a high-fat diet. During low metabolism phase, the drug was found to put the body on a weight loss mode.

An augment in dose cuts weight gain completely and the drug actually improved insulin sensitivity in mice, cutting down on chances of diabetes. While no side-effects were visible on the tested mice but researchers said they need an elaborate research on the drug's safety.

Professor Stephen Bloom, Obesity researcher at Imperial College London, said: "This sounds interesting but is terribly early. We do need new treatments for obesity, particularly as there are 1,000 deaths a week in the UK from obesity."

In addition Prof Ian Broom from Centre for Obesity Research and Epidemiology at The Robert Gordon University, said: "Research in this area is to be welcomed as an additional route of combating the obesity epidemic and associated co-morbid disease."

However, he maintained that besides any drugs, lifestyle and dietary modifications are equally instrumental in combating obesity.

**'Anti-Aging' Pill Makes Mice Mighty**

7th Nov 2008

Discovery Channel

Eat more than you should. Stay skinny. Run twice as far. Those are the big claims coming from a new drug study from Sirtris Pharmaceuticals, Inc., based in Cambridge, Mass. This latest study clears the way for human clinical trials of SRT1720, often touted as an "anti-aging pill."

SRT1720 activates the same receptor as the much-discussed resveratrol, the chemical in red wine that may slow some effects of aging. Both resveratrol and SRT1720 are being tested as a way to treat type-two diabetes first, and possibly other age-related diseases, later.

"We are very excited by these results," said Michelle Dipp of Sirtris. "These compounds are mimicking calorie restriction and exercise while lowering levels of glucose and insulin in mice. It's a game changer."

The European scientists overfed two groups of mice by about 40 percent. For a person, that would be close to eating 3,000 calories a day, enough to pack on significant weight.

The mice were first divided into a control group and test group. The test group was given two doses of SIRT1720: 100 mg or 500 mg.

After 15 weeks of eating the high-calorie diet, the control mice gained significant weight. The mice taking 500 mg of the drug, however, gained no weight. The cholesterol levels of the mice on the drug also improved.

The animals' exercise habits were also recorded. Mice without SRT1720 ran for roughly half a mile. Mice given 100 mg ran roughly seven-tenths of a mile. And mice on 500 mg of SRT1720 were able to run a full mile, twice the distance of untreated mice.

Dipp won't speculate on the drug's upper limits, other than to say that tests have shown that above 500 mg, its effects plateau. SRT1720 has no known side effects.

The research, led by Johan Auwerx at the Ecole Polytechnique Federale de Lausanne (EPFL) in Switzerland, was published this week in the journal *Cell Metabolism*.

The new study echoes results published earlier in *Nature* with resveratrol, the chemical in red wine that led to much discussion about the "French paradox," the seeming ability of French people to eat high-calorie meals, with a glass of red wine, and remain thin. (To get the levels in the study, a person would have to drink dozens of bottles a day.)

SRT1720 is about 1,000 times more powerful than resveratrol, say the researchers. The two chemicals are not related structurally, but both influence the same chemical pathway in the body -- in particular, a type of receptor called SIRT1.

SRT1720 is more powerful than resveratrol because the body doesn't break the drug apart as quickly as it does resveratrol, making it more efficient at binding to the receptors.

The SIRT1 receptor is also activated during caloric restriction diets, which have been shown to lengthen life span in multiple animal models, and during exercise.

SIRT1 receptors are found in mitochondria, often called the powerhouse of the cell because of all the energy they produce.

Cells start out with lots of mitochondria. As the body ages, the mitochondria start to die off or fail.

While more research is needed to prove the connections, mitochondria are suspected to contribute to age-related diseases such as cancer, diabetes and Alzheimer's. Sirtris hopes SRT1720 will eventually be approved to treat these age-related diseases as well.

SRT1720 would be used as a therapeutic drug, not a preventative measure. "The FDA doesn't have a clear approval path for disease prevention," said Dipp. "It does have paths for treating disease, however, and that's what we are going after."

Rafael de Cabo, a researcher at the National Institutes of Health who studies SRT1720's life-extending effects on mice but was not involved in the European study, says that the results are "fantastic and well done."

Still, he urges patience; mice are very different creatures than humans, and more research needs to be done before SRT1720 or its weaker counterpart, resveratrol, are taken by humans.

"I always get the same question [about resveratrol]; how much should I take?" said de Cabo. "I don't take it, and until we have more data, I don't think other people should take it either."

## **New Horizons In Type 2 Diabetes Research**

7th Nov 2008

NPR

Two papers published in the journal Cell Metabolism present different approaches to controlling glucose levels in people with Type 2 diabetes — the form of the disease in which the body gradually loses the ability to use insulin to control sugar levels in the blood.

In one, a hormone called apelin, which is produced in fat tissues, was injected intravenously into normal and obese mice, and was found to significantly reduce blood sugar levels.

In another study, researchers used an experimental drug manufactured by GlaxoSmithKline that mimics the behavior of resveratrol, a compound found in red wine and grapes. The artificial resveratrol decreased blood sugar levels and restored insulin levels to normal in diabetic mice.

C. Ronald Kahn, professor at the Harvard Medical School, talks about the two approaches and other work on treating diabetes.

## **Body tricked into losing weight by new drug**

7th Nov 2008

The National Business Review

In long overdue news for increasingly sedentary first world citizens (and their marketing-driven appetites) around the globe, French scientists have discovered a drug said to 'trick' the body to burn fat away – even on a high fat diet reports The BBC.

The drug - SRT1720 - has protected mice against insulin resistance and weight gain according to the University of Pasteur team's results published in Cell Metabolism.

SRT1720 is a chemical cousin of resveratrol, (the beneficial antioxidant extract found in red wine) and targets a protein called SIRT1 which is understood to combat aging.

Earlier studies showing resveratrol countering some effects of a high-calorie diet via SIRT1 prompted the French team's interest, but tests in mice suggested humans would need gallons of wine to stand a chance of getting the same benefits.

So the team focused their efforts on creating a more potent drug specifically targeting SIRT1, and found after 10 weeks of treatment a low dose of SRT1720 partially protected mice from gaining weight on a high-fat diet.

The drug works by changing the metabolism to a fat-burning mode that usually only starts when energy levels are low.

Higher doses completely prevented weight gain, as well as improving blood sugar tolerance and insulin sensitivity in the mice - important factors in warding off diabetes.

While there were no signs of side effects, further studies are needed before it can be tested on humans.

## **Breast Cancer Prevention: The Benefits of Resveratrol**

12th Nov 2008

Stop Aging Now

Resveratrol, the powerful antioxidant that red wine is known for, suppresses the abnormal cell formation that leads to most types of breast cancer, according to an in vitro study published in the July 2008 issue of Cancer Prevention Research.

“Resveratrol has the ability to prevent the first step that occurs when estrogen starts the process that leads to cancer by blocking the formation of the estrogen DNA adducts,” said lead author of the report Eleanor G. Rogan, Ph.D., in a prepared statement. This resveratrol-breast cancer link is significant because it means that resveratrol could stop the progression of breast cancer, since breast cancer is often fueled by increased estrogen levels.

The findings of this research are exciting because these results were accomplished using fairly low concentrations of resveratrol. The suppression of estrogen DNA adducts was seen with a resveratrol concentration of 10 micromoles per liter, a level comparable to that of red wine. (A typical glass of red wine has a resveratrol concentration between 9 and 24 micromoles per liter, and contains between .3 and 1.9 mg of resveratrol.)

It's hard to know exactly what these results mean in terms of how much resveratrol you need to consume to get its breast cancer prevention benefits, since the study was conducted in vitro. However, other research has shown that resveratrol activates anti-aging genes at dosages equivalent to about four glasses a day of red wine. We don't recommend upping your alcohol intake to quite that level—luckily you can easily get that amount from a supplement.

**The Anti-Aging Bottom Line:** Breast cancer is the most common kind of cancer among women in the U.S. and the #6 leading cause of death. Take a proactive approach to reducing your risk by eating a balanced diet, exercising and supplementing with antioxidants like resveratrol, which science has shown to provide protection against breast cancer. You can drink wine to increase your resveratrol intake, but since some research has shown that even moderate alcohol consumption can promote breast cancer in women, we recommend taking a standardized supplement.

## **Substance in Red Grapes and Wine Key to Alzheimer's Disease**

16th Nov 2008

PRWeb

Scientists at The Feinstein Institute for Medical Research have figured out why a substance in red grapes and red wine lowers amyloid beta levels that accumulate in the brains of Alzheimer's patients.

Washington, DC (Vocus/PRWEB ) November 16, 2008 -- Scientists at The Feinstein Institute for Medical Research have figured out why a substance in red grapes and red wine lowers amyloid beta levels that accumulate in the brains of Alzheimer's patients. Medicines targeting amyloid beta that make up the clumps in the hallmark plaques are now in many phases of experimental testing. The hope is that clearing out amyloid beta before it accumulates could stave off the disease and reduce symptoms. Scientists at the Feinstein hope to develop this natural substance, called resveratrol, or synthetic versions, for the treatment of Alzheimer's.

Valorie Vingtdeux, PhD and their colleagues have discovered that a specific kinase – AMPK – controls Abeta levels. AMPK is an interesting protein because it is a metabolic sensor in the cells and throughout the body. It senses levels of ATP, the body's fuel source. When ATP levels drop, AMPK is activated to prepare the cells to adjust to the metabolic change in the body – when fuel is low. It's like a driver moving along at 50 and slowing down when it realizes that there is trouble ahead.

Resveratrol activates AMPK and in turn this protein lowers Abeta levels. Dr. Vingtdeux presented these findings at the Society for Neuroscience annual meeting in Washington, DC, this week. The work has been done so far in cell culture but Philippe Marambaud, PhD, who oversees the research, said there is every reason to believe that a similar process takes place in nature. "We hope that this result will translate into beneficial effects for Alzheimer's patients someday," said Dr. Marambaud. This is an important finding because the scientists identified a new potential molecular target – AMPK – to lower Abeta levels in Alzheimer's. It also opens the door to considering more potent analogs of resveratrol. Feinstein scientists are now screening libraries of substances to see whether there are any compounds that could mimic the effects found in this substance. As it is, the amounts found in grapes and wine are small and it would not be feasible to ingest enough to have a benefit. The Feinstein chemists have identified several compounds that are now in different stages of testing.

Dr. Marambaud said that there are drugs available that are used for type 2 diabetes, metabolic syndrome and obesity that activate AMPK.

## **How to prevent Alzheimer's disease – part 1**

21st Nov 2008

Foodconsumer.org

Alzheimer's disease is a serious yet incurable brain disease affecting an estimated 4.5 million Americans. A recent study suggests that taking ginkgo biloba supplements is useless in helping the elderly prevent the disease.

The finding does not apply to all people at all ages although it does suggest that ginkgo may not be effective against the development and or progression of Alzheimer's disease in people age 75 or older, at least at the dose of 120 mg a day.

ginkgo has been used by many believers in natural remedies or alternative treatments and the herbal industry have said in response to the study that the finding does not undermine previous evidence suggesting that use of ginkgo supplements help Alzheimer's patients.

In any case, Dr. Steven DeKosky, dean of the University of Virginia School of Medicine reported the study of 3,000 apparently healthy people age 75 or older in the Journal of the American Medical Association saying that use of 120 mg per day for about 6 years makes no difference in the risk of developing Alzheimer's.

Daniel Fabricant of the Natural Products Association was cited as saying that studying people younger than about 80 years old may be the best way to examine the efficacy of ginkgo on Alzheimer's prevention.

Does this study have a final say about the efficacy of ginkgo on Alzheimer's disease? Probably not. At least the study does not imply that the results apply to people younger than 75. Another issue is the dose. Many people believe that 120 mg per day is not higher enough to have an effect.

For most of us, what can we do about prevention of Alzheimer's disease? Good news is that we can do a lot of things to reduce the risk. Below are some studies giving us some ideas about what we can do.

**Control your blood sugar:** Researchers from Stockholm's Karolinska Institute reported that people with high blood sugar levels may be at an increased risk of developing Alzheimer's disease. They say you don't have to get diabetes to get Alzheimer's. The study was presented at on the opening day of the 10th International Conference on Alzheimer's Disease and Related Disorders held in 2006 in Madrid.

**Avoid high fat diet:** A study led by researchers at Université Laval in Canada and published in the Oct 14, 2008 issue of *Neurobiology of Aging* suggests that eating high fat diet with low amounts of omega 3 fatty acids commonly found in most industrialized countries may increase the risk for Alzheimer's disease.

The animal model study showed that a diet with high amounts of animal fat and low amounts of omega-fat exacerbated the main neurological markers for Alzheimer's disease in the brains of mice fed the diet for nine months.

The researchers found that the mice fed low omega-3s and high in fat had 8.7 and 1.5 times higher levels of amyloid-beta and tau protein respectively than those fed low fat (7 times lower). Tau proteins prevent proper neuron functioning and amyloid-beta is associated with the formation of plaques in the brains of Alzheimer's patients.

The high fat diet also reduced the level of drebrin protein in the brain, which is another characteristic of Alzheimer's disease, according to the study.

**Living with a partner:** One Finnish study of 2,000 people by Krister Håkansson, researcher in psychology at Växjö University and Karolinska Institutet, Sweden found living with a spouse or a partner decreases the risk of developing Alzheimer's and other dementia diseases. The results were presented for the first time at the world's largest dementia conference held in July 2008.

Previous research has shown that an active lifestyle, both intellectually and socially, can reduce the risk of developing dementia.

Take Grape seed extract: A new study published in the Nov 21, 2008 issue of Journal of Biological Chemistry suggests that patients with Alzheimer's disease may be better off taking grape-seed extract supplements.

Epidemiological studies have found that moderate consumption of red wine rich in polyphenols were associated with reduced incidence of Alzheimer's disease, prompting some researchers to speculate that polyphenols in grape seeds may provide similar benefits.

The current study led by Ono K and colleagues from the University of California in Los Angeles provided some detailed laboratory evidence suggesting that grape seed-derived polyphenols help prevent the two predominant disease-related amyloid beta protein alloforms.

Take Resveratrol supplements: Resveratrol found in red grapes and red wine, may help fight Alzheimer's disease, and possibly other amyloid-related diseases such as Huntington's, Parkinson's and prion diseases, according to a study published in the Nov. 11 issue of the Journal of Biological Chemistry.

The study showed that resveratrol lowers the levels of amyloid-beta peptides in cells, which along with other evidence, led the researchers to believe that resveratrol may help Alzheimer's disease. The study was conducted by Philippe Marambaud and his colleagues at the Litwin-Zucker Research Center for the Study of Alzheimer's Disease and Memory Disorders in Manhasset, New York.

Spice your food with curry: Curcumin, a component of curry and turmeric, seems to help the immune system get rid of amyloid beta -- the protein that builds up to form damaging plaques in the brains of Alzheimer's patients, according to a study in the July 2007 issue of the Journal of Alzheimer's Disease. The study was conducted by Dr. Milan Fiala Medicine at UCLA and the VA Greater Los Angeles Health Care System.

Take ginkgo supplements: Although the recent study disproved the efficacy of this herb in preventing Alzheimer's in people age 75 or older, younger people may benefit from the supplement. Start taking it while you are young enough. And also adopt a healthier lifestyle including diet.

## **New Longevity Drugs Poised to Tackle Diseases of Aging**

21st Nov 2008

Wired

Cancer, diabetes, Alzheimer's, Parkinson's, heart disease: All have stubbornly resisted billions of dollars of research conducted by the world's finest minds. But they all may finally be defied by a single new class of drugs, a virtual cure for the diseases of aging.

In labs across the country, researchers are developing several new drugs that target the cellular engines called mitochondria. The first, resveratrol, is already in clinical trials for

diabetes. It could be on the market in four years and used off-label as an all-purpose longevity enhancer. Other drugs promise to be more potent and refined. They might even be cheap.

"It's going to revolutionize western medicine," said Doug Wallace, a pioneer of mitochondrial medicine at the University of California at Irvine. "All the things that are common for an aging society, and nobody worried about when they died of infectious disease," he said, could be treated.

If the idea of a cure-all sounds fantastic, that's because it is. History is littered with failed wonder drugs, elixirs of youth and miracle cures. But these new drugs have shown tremendous promise in mice. And though success in animals is far from a guarantee for humans, the research has gone from tantalizing curiosity to a possible foreshadowing of human health care in the 21st century.

As fewer people in the West die of infectious diseases, these new mitochondrial drugs could prevent a wide range of age-related illnesses, though they likely won't extend the lifespans of healthy individuals.

Not long ago, the silver-bullet approach was disregarded, and it's still far from achieving a consensus in the scientific community. But standard research approaches to cancer, dementia and heart disease have provided relatively small benefits, and evidence has continued to accumulate in favor of Wallace and like-minded researchers who advocate a mitochondrial theory of disease.

The new drugs work by stimulating enzymes that regulate the function of mitochondria. Hundreds of these structures are found in every cell in the body, ceaselessly converting glucose into usable energy. But over time, mitochondria degenerate. They lose strength and efficiency, releasing highly reactive oxygen molecules that bind easily with other molecules and wreak cellular havoc.

A growing number of scientists suspect that the breakdown of mitochondria is among the most important causes of cell-level changes that eventually cause the body's tissues to degenerate with age. The damage accumulates gradually until hitting some critical mass of malfunction, at which point diseases arrive rapidly. That may be why so many diseases first occur during middle age, and become steadily more common afterwards.

Repair and prevent this damage, say proponents of the mitochondrial theory of disease, and those afflictions can be averted.

In the last year, mitochondrial malfunction was associated with heart disease, just as it's also been associated with Alzheimer's disease and diabetes. Researchers verified that the cellular changes produced by caloric restriction — a longevity-enhancing dietary intervention — are enjoyed by mice taking resveratrol, the first and best-known mitochondrial drug. Resveratrol, which also occurs naturally in red wine, didn't extend the maximum lifespan of the mice, but it did protect them from the ravages of aging.

Most recently, a next-generation longevity drug with the same molecular target as resveratrol allowed mice to gorge on high-fat food for four months without gaining weight or developing diabetes.

Early-stage human trials of resveratrol for diabetes appear promising and have been expanded. Those trials are led by Sirtris Pharmaceuticals in Cambridge, Massachusetts, which claims to have several compounds in its pipeline that are stronger than resveratrol. The company was purchased last year by GlaxoSmithKline, signaling how seriously mitochondrial medicine is now taken by the pharmaceutical industry. According to Sirtris CEO Christoph Westphal, every major drug company is now researching mitochondrial targets.

For many sober-minded scientists, the question is no longer whether an intervention in age-related diseases will happen, but when. And they say it could be soon.

"Enough evidence has come out to suggest that, since we've now accomplished this successfully in other species, there's reason to think we could do it in people," said Stephen Jay Olshansky, a University of Illinois public health and aging expert, who recently co-authored a British Medical Journal article on the near future of anti-aging research.

Olshansky also co-authored an upcoming analysis of American demography in 2050 as part of a \$3.9-million MacArthur Foundation research project on aging in America. The analysis assumes a multi-target breakthrough against the diseases of aging.

"We genuinely think it's going to happen," he said. "We said that we not only believe it's possible, but should be aggressively pursued as the new approach to health and disease prevention for this century."

But not everyone is so enthusiastic. Steve Austad, a University of Texas gerontologist who warned two years ago against thinking of mice "as small little furry humans with long tails," is still unconvinced and doesn't think that mitochondria will be an easy drug target. University of Southern California gerontologist Valter Longo noted associations between mitochondria and health aren't yet as firm as their proponents suggest.

"As far as aging itself and the major diseases of aging are concerned, such as cancer and Alzheimer's, we really have no idea how important mitochondrial damage is to it. It's not clear that major diseases are caused by mitochondrial damage, though that's still a good bet for where to go," Longo said. He added that resveratrol does appear promising for obesity and diabetes.

There's also the issue of side effects. Resveratrol has proven safe in animals and early clinical trials, but much more testing is required. As a cautionary, Longo offered the example of his own research on caloric restriction and genetic manipulation of IGF-1, a cell-growth-regulating gene. In simple organisms, it's produced the most-dramatic life extension ever seen — yeast lived 10 times its normal lifespan — but a group of

Ecuadorians who naturally have that mutation have severe growth deficits and other health problems.

Even Longo, however, thinks resveratrol will enjoy some success in the near future, and mitochondrial approaches are being steadily embraced within the medical research community, which has been largely frustrated in its disease-by-disease, gene-centered approach.

"The approach we've taken is to go one disease at a time," said Olshansky. "We've created national institutes to go after all these major diseases, and every time we identify a new gene, or do something that lets us attack disease a little more efficiently than before, everyone jumps up and says we've succeeded and that's wonderful."

Such research is important, said Olshansky, but not as promising as hitting diseases at a common root. And though he won't yet commit to resveratrol as a wonder drug, he suspects that mitochondria-targeting drugs will provide a breakthrough. The most important question now, he said, is how much the drugs will cost.

Harvard gerontologist David Sinclair, who co-founded Sirtris Pharmaceuticals and first showed resveratrol's effect on mice, says the drug will be inexpensive. Since the company is testing its own formulation as a diabetes drug, it will need to be priced at just a few dollars per dose, competitive with other diabetes treatments. People who use it off-label for other diseases would pay the same price.

But that's still speculative, said Olshansky, and there's no guarantee of resveratrol's efficacy. To make sure of success, he said, there needs to be a massive public investment in research.

"We believe we know how much it will cost to generate an intervention that slows aging in people," he said. "It will cost about \$3 billion. It could be developed in enough time to influence the health and longevity of baby boomers. And any intervention that helps them will help all subsequent generations."

This may seem far-fetched. The makers of resveratrol and other mitochondrial medicines are merely the latest scientists to promise easy and universal health in a bottle. But everything is unproven until it's proved.

"Powered flight research was fruitless until it wasn't," said Aubrey de Grey, founder of the longevity-research-sponsoring Methuselah Foundation. "The harder we try, the sooner we'll succeed."

## **Fighting disease, one mitochondria at a time**

24th Nov 2008

Clusterflock

A new class of drugs based on resveratrol, naturally occurring in wine and grapes, are designed to fight age-related diseases in an attempt, ultimately, to pause it.

A growing number of scientists suspect that the breakdown of mitochondria is among the most important causes of cell-level changes that eventually cause the body's tissues to degenerate with age. The damage accumulates gradually until hitting some critical mass of malfunction, at which point diseases arrive rapidly. That may be why so many diseases first occur during middle age, and become steadily more common afterwards.

Repair and prevent this damage, say proponents of the mitochondrial theory of disease, and those afflictions can be averted.

In the last year, mitochondrial malfunction was associated with heart disease, just as it's also been associated with Alzheimer's disease and diabetes. Researchers verified that the cellular changes produced by caloric restriction — a longevity-enhancing dietary intervention — are enjoyed by mice taking resveratrol, the first and best-known mitochondrial drug. Resveratrol, which also occurs naturally in red wine, didn't extend the maximum lifespan of the mice, but it did protect them from the ravages of aging. Most recently, a next-generation longevity drug with the same molecular target as resveratrol allowed mice to gorge on high-fat food for four months without gaining weight or developing diabetes.

## Researchers Develop Drug To Cure Most Old Age Diseases

24th Nov 2008

Huliq News

A new single class of drugs designed to cure old age diseases are all being developed in research labs. For so long diseases like cancer, diabetes, Parkinsons, Alzheimer's and heart disease have resisted treatment. Now, researchers may have discovered the cure for diseases of old age.

These wonder drugs are being developed as we speak. Targeting the cellular makeup in our bodies known as mitochondria. A drug being developed for diabetes, resveratrol is currently in clinical trials. Its possible this old age disease could be on the market within four years with a dual purpose: to cure diabetes and as a fountain of youth drug. The best thing about these longevity drugs is that they will be very affordable.

"It's going to revolutionize western medicine," said Doug Wallace, a pioneer of mitochondrial medicine at the University of California at Irvine. "All the things that are common for an aging society, and nobody worried about when they died of infectious disease," he said, could be treated.

If this drug sounds like a miracle cure drug for old age diseases, then don't be surprised if they are. Historically, man has been looking for the fountain of youth since Ponce de Leone. However, researchers report that these new old age disease drugs have shown positive response in lab mice. There is no guarantee that the drugs will have the same

effect on humans as they do the lab mice, but a cure for these old age diseases is promising.

The goal of the research is to extend the life of healthy individuals so that the old age related diseases can be prevented. Mitochondrial drugs used to treat Alzheimer's and Parkinson's for example may even prevent an even wider range of age related illnesses.

Because hundreds of mitochondria structures are in every cell in our bodies, they effortlessly convert glucose into usable energy. With old age, mitochondria degenerate, losing efficiency and strength. Scientists now believe that the eventual breakdown of mitochondria is one of the most important things that lead to body tissue degeneration. This damage builds over time until it reaches a point of malfunction at which time old age diseases arrive quickly. The theory leads researchers to believe many diseases occur first during middle age and become more severe as old age progresses.

The goal of the research is to repair and prevent any oncoming damage, and supporters of mitochondrial theory of disease believe old age diseases can be avoided.

Resveratrol is found in red wine and when used on lab mice, it extended the lifespan of mice. The drug also allowed mice to splurge on high fat foods for four months without weight gain or the development of diabetes. Now, every major drug company is researching mitochondrial as a wonder drug to cure old age diseases and extend lifespan. To show how serious it was about the development of the drug, GlaxoSmithKline purchased the company that performed the early stage human trials of resveratrol. Definitely a sure sign that an affordable drug to cure old age diseases and extend lifespan could be a reality soon.

## **Is Resveratrol the Fountain of Youth?**

27th Nov 2008

Natural News

There are a lot of great anti-aging and metabolism boosting nutrients: DHA, pantethine, acetyl-l-carnitine, carnosine, R-alpha lipoic acid, grape seed extracts – the list goes on and on. In fact, most nutrients help cells function better and thus live longer. So, why is resveratrol vying for the position as King of the anti-aging nutrients – with a potent fat-burning twist thrown in for good measure?

Maybe we should ask Big Pharma, who is spending a pile of cash on metabolites of resveratrol that they hope to patent as weight loss drugs, diabetes drugs, and a new generation of anti-aging medicines. Part of the way resveratrol works is by activating a powerful metabolic fat-burning and anti-aging gene called SIRT1. In newly published Big Pharma animal research, their resveratrol drug activated SIRT1, prevented weight gain on a high fat diet, improved blood sugar and insulin function, and doubled the exercise endurance of the mice.

Interestingly, resveratrol dietary supplements have been shown to do essentially the same thing. The resveratrol drug (SRT1720) is apparently six times more potent at activating SIRT1 than plain resveratrol. However, plain resveratrol operates in a number of different ways besides activating SIRT1, providing a broader base of potential health benefits including comprehensive cardiovascular support.

What is Resveratrol?

Interest in resveratrol research took off when it was identified as a component in red wine that may be partly responsible for the "French Paradox," the ability to eat a higher fat diet with less heart disease than Americans. Research shows that resveratrol helps your liver metabolize fat and helps break down stored fat contained in your white adipose tissue.

Resveratrol is a type of polyphenol known as a stilbenoid, which is produced in grapes and blueberries to protect themselves from bacterial and fungal infection, and to a lesser extent from UV radiation. It was discovered that grapes growing in damp and moldy areas had the highest content of resveratrol of any known commonly consumed food/beverage. Resveratrol is obviously a potent anti-fungal compound and antioxidant.

Resveratrol is a different compound than the flavonoid proanthocyanidins of grape seed extracts, which also contribute to the notion of the French Paradox. Blueberries, by comparison, also contain flavonoids and a different stilbenoid called pterostilbene (pronounced "tero-STILL-bean"). Significant research at the USDA has shown that pterostilbene has a powerful ability to influence the metabolism of cholesterol and the synthesis of triglycerides by improving metabolism within cells, as well as providing brain-protecting anti-aging properties.

The amount of resveratrol in a bottle of red wine varies from 2 mg to 14 mg, mostly on the lower side. Dietary supplements of resveratrol are typically derived from the roots of Japanese knotweed (*Polygonum cuspidatum*), a far more economical source than grapes. Doses will range from a basic protective dose of a few milligrams (like a bottle of red wine), up to 100 mg per serving or more (a therapeutic dose).

Resveratrol is readily absorbed, reaching peak blood levels in 30 minutes, and then rather rapidly cleared by your liver. Thus, it is better to spread out intake during the day than to take a large amount all at once.

At this point, other than the colorful history and longevity benefits associated with red wine consumption, the majority of the extensive resveratrol research has been carried out with cell studies and small animals. The implications of this research are mind-boggling, clearly showing significant extension of life span.

The Fat-Burning and Anti-Aging Properties of Resveratrol

SIRT1 first drew attention as the primary gene signal involved with the longevity benefits of calorie restriction. A very simple explanation is that when you are in a food scarcity situation, SIRT1 is activated so as to help break down your stored fat to use as fuel as

well as to boost up your energy so that you have enough energy to hunt for new food. SIRT1 is part of a famine-related survival system.

Many experiments with animals show that by restricting calorie intake, SIRT1 is naturally activated, a finding that goes along with a noticeably extended lifespan, better fat and cholesterol metabolism, more efficient immune function, and better cardiovascular health. A number of humans have taken up calorie restriction experiments on themselves, and pictures of them do not portray the portrait of health. In fact, you would be hard pressed to pick out of a line-up someone on a self-induced calorie restriction diet and someone coming in for anorexia treatment. Which gets to my point, what is the difference between a calorie restriction diet and anorexia?

I have studied the calorie restriction science for 20 years and I am also the leading diet expert on the fat-derived hormone leptin, which is the overall boss hormone that controls your metabolic rate and your ability to survive a period of famine. Thus, I will give you answers in this area that you won't find elsewhere. There is a very fine line between prolonged calorie restriction and anorexia.

In the case of someone consuming too much food, their extra pounds of fat crank out inflammatory messengers (TNF $\alpha$  and IL6), in turn stimulating the liver to make the inflammatory CRP. This combination of inflammation induces significant free radical damage in the circulatory system and all around the body. As the waistline expands the volume knob on inflammation and free radical production is turned up. At the same time the liver becomes clogged with fat, which in turn is "cooked" by free radicals from the inflammation, eventually sending the liver on the path to looking like a fried piece of bacon. Arteries are also getting fat around the outside of the arterial wall structure, in turn generating more inflammation to the inside of arteries and deactivating friendly nitric oxide production. This makes blood pressure go up and blood not flow well and further induces free radical production in arteries that damages LDL cholesterol, promoting the formation of plaque.

In this scenario leptin levels are also high (leptin resistance), which lowers another fat-derived hormone called adiponectin, in turn causing a bad mood and insulin resistance that leads to type II diabetes. Leptin problems cripple thyroid function as well as promoting never-ending cravings to eat more food. This is the precise metabolic profile of millions of Americans on the fast track to diabetes, heart disease, and poor health. Ironically, they are being poisoned to death by too much food with no easy way out of the misguided subconscious drive to continue excess eating.

It is important to understand that just about everyone who is overweight and having trouble with their cravings has high leptin in their blood (leptin resistance), and that leptin is not getting into their brains correctly (a false state of misperceived starvation). Leptin resistance is caused by consistently eating meals that are too large, by eating after dinner at night, and by snacking.

Human beings do not have the genes to deal with the abuse of eating too much food, as during evolution this was never the problem. Rather, a scarcity of food was the primary issue that constantly threatened the survival of the human race – and so it is that we have a lot of mechanisms built in to help deal with starvation. The ability to survive famine is controlled by leptin. During famine leptin levels have gone low as your fat mass that secretes leptin in the first place has been reduced in size to use the stored fat for energy, which is how your subconscious brain knows a famine is occurring.

In response to this low-leptin famine issue, your liver turns on the production of SIRT1. This helps your liver know to break down fat to use as fuel, not store calories as fat, as well as to boost physical energy to be able to hunt or gather new food.

Considering all the interest in both SIRT1 and leptin, the number of studies linking the function of the two is remarkably absent from the literature. New research shows that SIRT1 is active in key regions of your brain that relate to appetite and energy, which are governed by leptin. Leptin deficient mice do not activate SIRT1 properly, and are always obese. The details of this relationship are far from clear. It is easy to predict that low levels of leptin from true starvation are able to trigger SIRT1 activation in your liver based on messages received from SIRT1 signaling systems in your brain. It is also easy to predict that high levels of leptin in your blood (obesity-related leptin resistance) turn SIRT1 off as they would be signaling your liver that famine is over or not happening.

As you begin to diet (especially if you follow the Leptin Diet) and drop your first 10-15 pounds you will clear high leptin from your blood, which is always reflected by your cravings going away. For a while your body is set to burn more calories based on your pre-dieting metabolic set point. The problem for many people is that you hit a plateau after a month or so of dieting that is too far from your goal weight.

If you eat less you can't function. Your head is heavy, you are irritable, your sleep gets disturbed, your immune system goes on the blink, and you are much more likely to get sick. If you exercise more you must eat more or you will be completely exhausted and feel even worse. If you get stressed, unlike the stress-free monkeys practicing calorie restriction, you are in real trouble and likely to eat the house down. Yes, you are practicing calorie restriction – how on earth is this state of feeling going to help you live longer? Answer – its not. You start generating inflammation the longer you are in this condition. The inflammation is no longer coming from your extra pounds of fat. It is coming from the trauma of the diet combined with stressors in your life.

Under these circumstances you are much more likely to break down muscle, a key sign of inappropriate weight loss. If you keep trying to lose weight while you feel this way you may be able to do so, but you will progressively lose more muscle, increase inflammation, generate a lot of free radical damage, disturb digestion, get sick really easily, and presto – you are anorexic. Funny thing is, you may still be an overweight anorexic. Wow – is that any way to diet?

Eating in harmony with leptin

If you start eating more food you will feel much better. Unfortunately, you messed with leptin in the wrong way. Leptin now turns off SIRT1 and goes into a famine-recovery mode. It commands that a large portion of the calories you are now eating go back to fat storage. Most people find themselves rapidly gaining weight on formerly normal amounts of food. Once the yo-yo routine comes to a halt you are likely to find yourself 5-10 pounds heavier than when you first started, as an insurance policy in case you attempt another dieting stunt in the future.

Solving this dilemma requires that you eat in harmony with leptin, which means following the five simple rules of the Leptin Diet. In many cases you will never hit this problematic plateau. However, many people will, especially if they have a history of yo-yo dieting. Enter resveratrol. Resveratrol is an ideal nutrient to enhance weight loss and maintain energy ONCE YOU HAVE GOTTEN PAST THE INITIAL PHASE OF 10-15 POUNDS OF WEIGHT LOSS, especially if you are getting stuck at a plateau.

Resveratrol will help turn on the SIRT1 gene, which will promote fat-burning in the presence of lower calorie intake. This is a terrific use of this nutrient. How do you know it's working? You have energy to exercise, you feel good, and your weight is trending downward while you are happy eating less food. This either is or isn't happening, thus it isn't very hard to figure out if resveratrol helps you.

How resveratrol enhances your weight loss efforts

One of the real values of this nutrient in the weight management context is helping you to not slide into an inflammatory anorexic-like metabolic problem as you try to lose weight. It is also a tool to help you break through weight loss plateaus should they occur. Resveratrol will work best when you are eating less food and have already cleared surplus leptin out of your blood through initial dieting efforts. However, you don't need to eat so little that you are on the scarecrow diet.

Research indicates that resveratrol will still help you out even if you aren't dieting or you don't need to lose weight. After all, the French had resveratrol in their diet when they were mostly thin. I might point out, however, that while the French were eating a higher saturated fat diet they were not overeating, their food was fresh and mostly organic, and they did not snack. The effects of resveratrol will be easily overloaded by overeating. Even the French Paradox has been doomed by an epidemic of leptin-disrupting snacking and junk food consumption.

Having a large waistline is clearly linked to premature death, a risk that goes up in direct proportion to your waistline's rate of expansion. Anything safe and natural that can help you get it back to optimal and keep it that way qualifies as life extending.

Cardiovascular and Other Benefits of Resveratrol

Simply losing weight healthfully will improve your cardiovascular health. If resveratrol is able to help you in this endeavor, regardless of any other cardiovascular help it provides, then it is a success as a cardio-friendly nutrient.

There is plenty of animal and cell science to predict that resveratrol assists the healthy structure and function of your cardiovascular system in multiple ways. It has been found to reduce the stickiness or adherence of immune cells to the walls of arteries, prevent adverse changes in the smooth muscle cells of arteries that lead to plaque accumulation, boost friendly nitric oxide levels (eNOS) that relax arteries and improve blood flow, help keep platelets from sticking together, reduce irregular heart beats, and reduce circulatory inflammation. It even helps protect against circulatory damage from high blood sugar. Keep in mind that in "modern" medicine, each one of these points requires a different drug that has other adverse side effects.

One of the first human resveratrol studies shows that resveratrol improved heart function in type II diabetic patients following a heart attack.

Resveratrol, like grape seed extract, operates in part as a protector of human body structure. This is clearly related to its anti-oxidant and anti-inflammatory properties, which include regulation of the primary inflammatory gene switch NF-kappaB. New animal and cell studies shows it helps bone health, reduces cataracts, helps coordination, reduces disk deterioration and protects joints, guards against Parkinson's, improves erectile performance, protects the liver, protects the pancreas, and helps regulate cell health while protecting against adverse cell changes.

This is a rather impressive array of science-backed support for any one nutrient. Maybe the anti-aging promise is real. The explosion of scientific interest in the compound ensures that you will be hearing a lot more about it in the very near future.

Common doses of resveratrol that show benefit and safety in animal studies range from 2.5 mg – to 10 mg per kilogram. This translates to an approximate dose range of 150 mg – 700 mg per day for a 150 pound adult, a sensible and safe dose range until more data is in.

## **Resveratrol Longevity Secret Unlocked by Scientists: It's the Chromosomes!**

27th Nov 2008

Natural News

What is it, exactly, about resveratrol that makes it one of the most miraculous nutrients that's ever been discovered by modern science? We already know resveratrol helps reverse heart disease, stops cancer and has a powerful anti-aging effect, but how exactly does it work?

Scientists from Harvard Medical School think they've found some clues. In research published in the journal *Cell*, they've documented how resveratrol activates a protein called sirtuin that performs an almost miraculous gene repair resulting in extended lifespan.

Their research concludes that sirtuin repairs breaks in human chromosomes, and resveratrol seems to activate sirtuin in just the right way to prevent the accumulation of chromosomal damage that leads directly to aging.

Of course, these scientists aren't really studying nature for the benefit of humankind: They're looking for the next miracle pharmaceutical, and they're ripping off molecules from Mother Nature in order to find it (and patent it). Just watch: In five years when this drug is approved by the FDA, they'll claim the drug is a miracle but resveratrol is useless.

It's the same scam they played with red yeast rice, from which the molecules used to synthesize statin drugs were stolen.

The truth is that resveratrol is a miracle nutrient all by itself, and we don't need to have it patented in order to benefit from it. Just buy resveratrol supplements right now and you can experience the anti-aging benefits (and heart protection benefits) for yourself!

## **Harvard Scientists Unravel The Secret Of Aging**

28th Nov 2008

efluxmedia

As we get older, our health becomes our worst enemy. What's the secret of living a longer healthy life, is a question still unanswered. At least until today, when Harvard researchers sustain that they might know the secret of aging.

Their paper published in this week issue of the journal Cell is the latest to draw attention to sirtuins, proteins involved in the aging process. Sirtuins become increasingly important as people age, according to lead author David A. Sinclair, a Harvard Medical School professor and co-founder of the Cambridge biotechnology company Sirtris Pharmaceuticals, Inc. The proteins help maintain a youthful pattern of gene expression by ensuring that the genes that should be "off" remain silent.

The same proteins appear to also repair DNA damage as we age, Harvard researchers found.

"The critical protein controls both which genes are off and on as well as DNA repair; it's used for both processes, and that's the catch," said Sinclair.

As we get older, more and more chromosomes get damaged and the SIR1 proteins can't handle both jobs as well. This causes gene activity to go "haywire" leading to symptoms associated with the process of aging.

But the good part is just starting. The scientists have found evidence that the aging process can be slowed. They discovered that mice with more SIRT1 proteins have an improved ability to repair the DNA and to prevent the unwanted changes in the gene expressions.

Previous studies have shown that resveratrol, a chemical found primarily in red wine, helps activate the SIRT1 protein, which aids in the repair of broken chromosome. It's true that the studies have been conducted on mice, but it's an important step forward and a reason to believe that the possibility of improving our life is closer than we think.

The studies showed that resveratrol (which is also found in the crust of peanuts and walnuts, in grapes, peanut butter, pistachios and other foods) seemed to ward off the effect of age on heart, bones, eyes and muscles of mice, improving conditions such as cataracts, osteoporosis and poor motor coordination, conditions that are also making the elderly very frail. Therefore, life is prolonged since the chemical reduces at the same time degenerative diseases of aging, such as Alzheimer's. Also certain cancers could be treated with drugs containing this ingredient if proven efficacious.

However, the researchers said it would be too early for people to start taking resveratrol in order to improve health, as the compound might interact with other drugs. However, if drugs containing resveratrol are not yet available, one glass of wine at dinner won't do you any harm. Besides "warming" the atmosphere, there's plenty of evidence showing that it protects your heart from aging and everybody needs a younger heart in order to have a longer life. Cheers!

## **Wine Boosts Omega-3s for Healthier Heart, Study Finds**

9th Dec 2008

Natural News

NaturalNews) Omega-3 fatty acids, mainly derived from cold water fish like salmon, are known to help prevent coronary heart disease and sudden cardiac death. Now European researchers have found that moderate wine drinking acts like a booster for omega-3s -- it raises the levels of the beneficial fatty acids in plasma and red blood cells. This major finding of the European study IMMIDIET will be published in the January issue of the American Journal of Clinical Nutrition, an official publication of the American Society for Nutrition, and is available on line now ([www.ajcn.org](http://www.ajcn.org)).

"Several studies have shown that moderate alcohol consumption, including wine, is associated with protection against coronary heart disease and ischemic stroke. Although the mechanisms are not completely defined, there was some evidence that alcohol intake might influence the metabolism of essential polyunsaturated fatty acids, as omega-3," scientist Romina di Giuseppe of the Research Laboratories at Catholic University of Campobasso, Italy, who headed the research, said in a statement to the media. "That is exactly what we found in our population study. People drinking moderate amounts of alcohol, one drink a day for women and two for men, had higher concentration of omega-3 fatty acids in plasma and red blood cells independently of their fish intake".

However, as the scientists point out in the study, this benefit of red wine could be attributed to polyphenols instead of the alcohol content of wine. Polyphenols, which have strong antioxidant activity, are naturally occurring compounds found in a different variety

of foods including berries, tea, beer, olive oil, chocolate, cocoa, coffee, walnuts, peanuts, pomegranates and grapes used in wine-making.

"Analysis carried out on different alcoholic beverages showed that the association between alcohol and omega-3 fatty acids was present in both wine drinkers and beer or spirits drinkers. However, the association was stronger between wine drinking and omega-3 fatty acids levels," Licia Iacoviello, coordinator of the IMMIDIET study at Catholic University of Campobasso, explained in the press statement. "This suggests that components of wine other than alcohol are associated with omega-3 fatty acids concentration. We may guess this effect can be ascribed to polyphenols".

More good news for moderate wine drinkers: A study by Cornell University scientists recently published in the journal *Neurochemistry International* found that resveratrol, a polyphenol found in red wine, peanuts, and pomegranates, could help treat neurodegenerative diseases. In an animal study, the scientists fed resveratrol for forty-five days to mice with Alzheimer's type plaques in their brains. The result? The polyphenol diminished plaque formation. This supports the idea, the researchers concluded, that neurodegenerative diseases may be delayed or mitigated with use of dietary agents such as resveratrol.

## **The Procyanidins of Red Wine and Their Anti-Aging Effect**

9th Dec 2008

Natural news

(NaturalNews) Moderate red wine drinkers have less incidence of heart disease than non-drinkers and now scientists are confirming a direct correlation between red wine and many powerful anti-aging benefits. Moderate consumption of some red wines may be a very effective way of improving your cardiovascular health as well as your lifespan. However, it is important to choose the correct red wine.

Unfortunately, only traditional production methods have been determined to produce the high concentration of the active ingredient necessary for anti-aging benefits. This ingredient is found in the wines produced in Southwest France and Sardinia, Italy. When the wines from these regions were tested, researchers found higher levels of polyphenols. In fact, they found up to 5 to 10 times higher concentrations in these wines, than in wines from New World countries.

They wondered what the difference between these wines was. They eventually determined that the traditional production methods used in these regions insured that the beneficial compounds were extracted more efficiently. This is likely the reason for the strong association between consuming traditional lines and overall good health and longer life spans.

Researchers tested further to determine which were the most potent polyphenols. After purifying the most active polyphenols, they determined that procyanidins were found

most abundantly in red wine. In fact, in some traditional red wines, up to 1 gram per liter was detected.

In addition, the researchers found contradictory evidence to the claims that resveratrol is the magic ingredient to good health. They found the levels of resveratrol to be so low that one would need to consume 1000 L per day to get the desired benefits.

So, what is different about traditional wines? Traditional wines are processed using full extraction methods. This requires more skill to produce. These wines are also more tannic. More recent wines are typically described as having smooth tannins and this corresponds with almost no procyanidins.

The following factors have been identified as directly affecting the procyanidins content in wines.

1. The selection of grapes - based on the ripeness
2. The amount of time that seeds and skins are in contact with the fermenting juice
3. Any filtration processes performed

Typically, traditional wines ferment for approximately one month. This results in the full extraction of procyanidins. In contrast, more modern wines typically ferment for only a few days. This is only enough time for the color to be extracted from the grape skins.

Using overripe grapes results in a wine with less procyanidin content and higher sugar content. A red wine that is more sweet and has higher alcohol content has significantly lower procyanidin content.

Procyanidins have shown direct benefits on arterial function in blood vessels. In fact, polyphenols have been determined to have a protective effect on the vascular system to the point where they improve the endothelial cells that line the arteries.

To realize these health benefits one must consume red wine that is less sweet and has a lower alcoholic content. For the most health benefits, one or two glasses of red wine with a meal are optimal. Grape seed extract has been shown to lower blood pressure as well. Two small glasses of red wine would provide the same effect as grape seed extract.

Red wines from Southwest France are the ideal wine to choose.

## **A potential drug for ischemia/reperfusion related liver injury**

23rd Dec 2008

EurekaAlert

Hepatic injury caused by ischemia/reperfusion (I/R) has been proposed as a key clinical problem associated with liver transplantation and major liver surgery. The production of

reactive oxygen species (ROS), including superoxide, hydrogen peroxide, and hydroxyl radical, has been demonstrated in reperfusion injury. Resveratrol has been reported to have several biologic effects such as a potent antioxidative effect via prevention of lipid peroxidation.

A research team led by Ercan Gedik from Turkey evaluated the possible protective effect of resveratrol against I/R-induced hepatic injury, using biochemical and histological parameters. This will be published on December 14, 2008 in the World Journal of Gastroenterology.

A total of 40 male Sprague-Dawley rats weighing 240-290 g were randomized into four groups of ten: (1) controls: data from unmanipulated animals; (2) sham group: rats subjected to the surgical procedure, except for liver I/R, and given saline; (3) I/R group: rats underwent liver ischemia for 45 min followed by reperfusion for 45 minutes; (4) I-R/Resveratrol group: rats pretreated with resveratrol (10  $\mu\text{mol/L}$ , iv). Serum liver enzymes and histological changes were studied. They found that Plasma aminotransferase activities were higher in the I/R group than in the I-R/Resveratrol group. Malondialdehyde levels and the hepatic injury score decreased, while superoxide dismutase, catalase, and glutathione peroxidase levels increased in group 4 compared to group 3. In group 4, histopathological changes were significantly attenuated in resveratrol treated livers.

These results suggest that resveratrol has protective effects against hepatic I/R injury, and is a potential therapeutic drug for ischemia reperfusionrelated liver injury

### **Scientists research into life extension produces a growing demand for Resveratrol a substance found in red wine**

23rd Dec 2008

1888 Press release

Resveratrol is something that is found in the skins of grapes and Resveratrol is particularly found in red wine where the skin is used in making the wine. It is also found in a common plant called Japanese Knotweed that can be extracted and sold in a more potent form than is found in red wine.

Resveratrol has been in the news because scientists have been investigating it's ability to help control a number of conditions such as diabetes, blood pressure, high cholesterol, etc., and are further investigating it's possible role in extending life span. Their tests so far related to life extension have produced positive results with a number of creatures including mice but, of course, human studies will take longer to be proven to the highly indisputable level demanded by science. Nevertheless, in the meantime, many people worldwide are now taking notice of these tests and reports and are already taking Resveratrol supplements.

Instances of research into Resveratrol are now abundant on the Internet and many examples can be found by entering the search term “resveratrol” or “resveratrol research” into search engines particularly Google or Wikipedia.

One aspect of research in recent years was where Resveratrol was identified by scientist as being a key element of what has been termed the “French Paradox” whereby people in this region have low rates of heart disease despite still having a typical western high fat diet.

There is now a growing demand for Resveratrol not just by those using it but also by smaller resellers wanting to buy small wholesale quantities of it to produce their own capsules.

Hi-Res <sup>TM</sup> is a new brand name of wholesale Resveratrol powder which is 98% pure and is now available in small wholesale quantities from the website at [www.wholesale.resveratrol.ibc.hk](http://www.wholesale.resveratrol.ibc.hk) and is available to be sent to any buyer worldwide in quantities starting as small as only 1Kg.

Hi-Res <sup>TM</sup> resveratrol powder and the website was launched by Tony Mackenzie a member of the Global Trade Group who was diagnosed a year ago with diabetes type 2 and high blood pressure. He researched into natural ways to control these conditions and first used magnesium chloride hexahydrate flakes for Transdermal Magnesium Therapy ( see [www.globaltrade-eu/magnesium](http://www.globaltrade-eu/magnesium) ) and eventually his further research discovered Resveratrol.

Tony says that "I originally started offering Magnesium Chloride Hexahydrate flakes for sale because I bought it for my own use after being diagnosed with diabetes and high blood pressure. As a result I have now been able to control this without the use of drugs. When I was doing my research I spoke personally to Dr Sircus who wrote the book about transdermal magnesium therapy (see [www.magnesiumforlife.com](http://www.magnesiumforlife.com) ) "

He comments: “When I wanted to buy Magnesium Chloride Hexahydrate flakes I found that most of the suppliers were overseas and it was a bulky product from the point of view of shipping costs so, as an import company operator myself, I bought it in bulk. Then friends and family wanted to buy it and suggested I put up a website about it which I did together with all relevant links. I was already operating a struggling import business and a website business so this was relatively easy for me to integrate it as a small business venture although it was not done from a commercial angle, I just had more of the flakes than I needed for my own use. My feeling at the time was that the news about it needs to be spread in view of the fact that it has been thoroughly researched now for over 90 years and yet still the mainstream ignore it and GP practices have no awareness of it.”

He further explains: “Then I discovered Resveratrol and tried that as well and my blood glucose levels and blood pressure came right down but we do not make any claims about any of these products and my personal interest is as a result of my own research into the ongoing trials of the products by people far better qualified than myself which has

resulted in me being satisfied enough to personally use them. Because of this we only offer wholesale quantities to buyers who understand the product and have done their own research. This includes resellers and those small companies wanting to produce their own capsules because they have, like me, done their own research and are confident enough that the products have some benefits. Due to our contacts in the import business we are able to offer a high 98% purity of Resveratrol in either small or large quantities as required by the buyer.”

His final comment: “ We offer a naturally sourced Resveratrol. It is noteworthy that Sirtris Pharmaceuticals, doing research into life extension and synthetic Trans-Resveratrol, has just been sold to Glaxo Smith Kline for 720 million US dollars. Need I say more?”

## **Grape compound in red wine may help heal liver injury**

24th Dec 2008

Thaindian news

Washington, Dec 24 (ANI): Scientists have found that resveratrol can act as a potential therapeutic drug for ischemia/reperfusion related liver injury.

Hepatic injury caused by ischemia/reperfusion (I/R) has been proposed as a key clinical problem associated with liver transplantation and major liver surgery.

Resveratrol is found in the skin of red grapes and is a constituent of red wine.

Reperfusion injury is characterised by the production of reactive oxygen species (ROS), including superoxide, hydrogen peroxide, and hydroxyl radical.

Resveratrol has been reported to have several biologic effects such as a potent antioxidative effect via prevention of lipid peroxidation.

Researchers led by Ercan Gedik from Turkey used biochemical and histological parameters to evaluate the possible protective effect of resveratrol against I/R-induced hepatic injury.

The study was conducted on a total of 40 male Sprague-Dawley rats weighing 240-290 g and they were randomized into four groups of ten controls: data from unmanipulated animals; sham group: rats subjected to the surgical procedure, except for liver I/R, and given saline; I/R group: rats underwent liver ischemia for 45 min followed by reperfusion for 45 minutes; I-R/Resveratrol group: rats pretreated with resveratrol (10 imol/L, iv).

The researcher studied serum liver enzymes and histological changes in all the groups.

They found that Plasma aminotransferase activities were higher in the I/R group than in the I-R/Resveratrol group.

Also, the researchers observed that Malondialdehyde levels and the hepatic injury score decreased, while superoxide dismutase, catalase, and glutathione peroxidase levels increased in group 4 compared to group 3.

In group 4, histopathological changes were significantly attenuated in resveratrol treated livers.

The results indicated that resveratrol has protective effects against hepatic I/R injury, and is a potential therapeutic drug for ischemia reperfusionrelated liver injury

The study was published in a recent issue of the World Journal of Gastroenterology. (ANI)

### **Berry grape news to reverse memory problems**

31st Dec 2008

iwire

USDA researchers found that older laboratory rats reversed the signs of aging on brain function and behavioral performance when they were fed a diet rich in the compound pterostilbene. It could be "berry grape" news (I mean) very great news for a healthy brain.

Their October 27, 2008 article "Cellular and Behavioral Effects of Stilbene Resveratrol Analogues: Implications for Reducing the Deleterious Effects of Aging" appears in the Journal of Agricultural and Food Chemistry, a publication of the American Chemical Society.

Their research was targeted at finding out if polyphenolic compounds, which are contained in rich-colored fruits and vegetables such as blueberries and red grapes, have strong antioxidant and anti-inflammatory properties to benefit humans.

Polyphenolic compounds, or polyphenols, are a group of chemical substances found in plants. It is identified by the presence of more than one phenol unit per molecule.

One such polyphenol is stilbene. Its derivatives (called stilbenoids) are present naturally in plants. Two types of stilbenoids are resveratrol and pterostilbene, which were studied here.

The researchers of this study are U.S. scientists from the U.S. Department of Agriculture (USDA).

Specifically, they are neuroscientist James A. Joseph, psychologist Barbara Shukitt-Hale, and colleagues from the USDA's Human Nutrition Research Center on Aging (HNRCA) at Tufts University, Boston, Massachusetts.

Also participating in the study is USDA chemist Agnes M. Rimando with the Agricultural Research Service's (ARS) Natural Products Utilization Research Unit, Oxford, Mississippi.