

## **A Daily Dose Of Alcohol Can Be A Good Thing**

28<sup>th</sup> Feb 2007

CBS news

New research on daily alcohol consumption was presented at a meeting of the American Heart Association (*CBS News*) Research has shown drinking a little wine everyday can protect the heart. Now a new study claims it can actually help extend life. Scientists found men who drank a half a glass daily. Lived almost 4 years longer than those who didn't. Why?

It's believed ingredients in wine may improve good cholesterol and blood flow. But, there's a compound in red wine that scientists are really focused on called resveratrol. "Resveratrol has an antioxidant property an anti-inflammatory property and actually positively influences certain genes in the body," says Doug Kalman of Miami Research Associates. In fact resveratrol may stimulate anti-disease genes.

In labs, such as one at the University of Miami, researchers are studying resveratrol on a variety of human conditions on everything from cancer, heart disease to even stroke. In Dr. Miguel Pinzon's lab, rats fed resveratrol had less brain damage after a stroke. Other animal studies have shown the compound can block the bad effects of obesity, and possibly slow the aging process. Pinzon says don't be surprised if one day it becomes a prescription.

"We hope that 5 years down the line or 10 years down the line we'll have something that can be taken to the clinic," says Dr. Pinzon. Human studies will decide resveratrol's true potential. For now, wine drinkers can at least toast to a longer life.

## **More Medical Uses for that Merlot**

6<sup>th</sup> March 2007

Hamptons online

Scientists at the Harvard School of Public Health have come up with yet another reason for us — particularly men who suffer from hypertension — to drink red wine. Apparently, drinking one or two glasses of red wine a day — the default definition of moderation — can decrease the risk of heart attack by 30%.

The researchers analyzed data from 11,711 hypertensive American men from the Health Professionals Follow-Up Study. Every four years, the participants filled out a survey and noted the frequency with which they drank beer, red wine, white wine and liquor. The researchers found that drinking moderately every day, regardless of beverage type, provided the best protection. However, the scientists added that in many previous studies red wine was found to provide greater heart health, especially when red wine is the main choice of alcoholic beverage.

When compared to nondrinkers, men with high blood pressure who were moderate drinkers were 30 percent less likely to have a heart attack. Drinkers who consumed a little

more or a little less than the nondrinkers also showed a 30 percent lower risk. Very-light drinkers--less than half a glass per day--showed a risk similar to nondrinkers.

So, if you suffer from hypertension, that glass of local merlot you had with dinner last night might be doing more than relax you. Drink up.

But, assuming your wine drinking falls into that moderate range - a glass or two a day — there are many more reasons to drink red wine.

Red wine can help you battle the common cold. Forget Airborne or Echinacea — Spanish scientists have found evidence that drinking a glass of wine every day can lead to 44% fewer colds. That's better than chicken soup too.

Red wine is heart friendly even if you don't have hypertension. An estrogen-like antioxidant called resveratrol may block cholesterol oxidation--lowering your risk for heart disease.

Red wine consumption can help lower your cholesterol too. Saponins, glucose-based plant compounds found in red wine are believed to bind to cholesterol and prevent its absorption.

Red wine fights cancer, too. Resveratrol also helps prevent cancer cells from reproducing according to Danish scientists. It can even protect your skin from bad sunburn and melanoma. I prefer white wine at the beach, but maybe a light-bodied red would be a healthier choice.

Now, scientists at Harvard Medical School and the National Institute on Aging have shown that an extract of resveratrol has a fountain-of-youth effect on mice. Tests on monkeys are next.

Red wine — drink it (in moderation). But, don't just settle for any ole red. Wineries like Lenz Winery, Paumanok Vineyards, Bedell Cellars, Roanoke Vineyards, Wolffer Estate and Raphael make some of the best local reds.

## **Here's to your health: Red wine can improve it**

15<sup>th</sup> March 2007

Pittsburgh Post

It was 150 years ago that Louis Pasteur, French microbiologist and inventor of pasteurization, proclaimed that wine is the "healthiest and most health-giving of drinks." The idea that moderate alcohol consumption plays a positive role in health is not new. I still remember my grandmother's "medicine" after a heart attack in the 1950s: A stiff drink each night before dinner, prescribed by her family doctor. (I don't think the term cardiologist even existed in those days in small towns.) That mixture of bourbon and ginger ale that she faithfully drank each evening kept her heart ticking for years.

So when my husband had quintuple bypass surgery recently, I asked his cardiologist what modern, cutting-edge medication today's patients should take to replace the old "one stiff drink a day." His answer was shocking enough to make my heart skip a beat. Essentially, he said, moderate alcohol intake has been medically proven to lower the risk of cardiovascular deaths and also to increase the life expectancy of men and women over 50.

In November, when researchers at the Harvard Medical School and the National Institute on Aging reported that a natural substance in red wine, known as resveratrol, extended the life and improved the health of overweight mice, there was a surge in red wine sales across the country.

But most two-legged consumers never bothered to read the fine print of this study. It specified that to benefit from the resveratrol effect enjoyed by the laboratory rats, a person would need to drink 750 to 1,500 bottles of red wine a day! Until there is adequate information about resveratrol's effects on human metabolisms, it is best to stick to moderate red wine consumption, which is well documented to help fight cardiovascular disease.

In February at the American Heart Association's Annual Conference on Cardiovascular Disease, a group of researchers from the National Institute for Public Health and Environment in the Netherlands reported that, compared to beer and spirits, wine was associated with the lowest levels of cardiovascular deaths. Their study followed 1,373 men over a 40-year period. The results proved that one glass of red wine a day produced a 48 percent lower risk of cardiovascular death and a life expectancy 3.8 years longer than that of the nonwine drinkers.

Other studies have shown that red wines contain flavonoids called polyphenolic compounds. In animals, these interfere with the buildup of fatty tissue in the arteries, which can result in a stroke or heart attack. A separate study conducted by scientists in the United Kingdom identified the specific ingredient in red wine that provides the health benefits as oligomeric procyanidins. The UK study also showed that some wines are two to four times higher in these procyanidins than others.

The most beneficial wines come from Sardinia and southwestern France. There, winemakers are still using traditional methods, and people have a longer-than-average life span. Since the procyanidins are found in the grape skins and seeds, the old-fashioned technique of leaving the skins in contact with the fermenting juice for as long as three weeks produces a wine with higher levels of the beneficial polyphenolic compounds. The wines also tend to be big and powerful with a robust amount of tannin. These wines need more bottle age than other wines and are best when aerated in a decanter before drinking. Since 1991, when "60 Minutes" broadcast a segment about the "French Paradox," there have been hundreds of articles touting the health benefits of drinking red wine. Bourbon and ginger ale might have worked for my grandmother, but my husband and I are adopting the new Rx: at least one glass of red wine per day. Doctor's orders. Here are the wines available in our state wine shops to drink for health and long life.

## **Red wine may cut colon-cancer risk**

14<sup>th</sup> March 2007

United Press International

STONY BROOK, N.Y., March 14 (UPI) -- Red wine, but not white wine, protected against colorectal cancer in a recent U.S. study.

Three glasses of red wine a week reduced the risk of colorectal cancer by 68 percent, according to Dr. Joseph C. Anderson and colleagues at the State University of New York at Stony Brook.

Drinking white wine did not have a similar effect; the researchers suspect higher concentrations of the compound resveratrol in red wine may explain the protective effect. Anderson compared the drinking habits of 360 red- and white-wine drinkers with similar lifestyles as part of a study examining the prevalence of colon cancer. The findings were presented at the annual scientific meeting of the American College of Gastroenterology. The results are not conclusive and should be confirmed in future studies.

Despite this finding, screening for colorectal cancer is the most proven preventive measure against colon cancer, according to the American College of Gastroenterology

## **Wine for Your Health and Wealth**

22<sup>nd</sup> March 2007

Montecito Journal

A U.S. Department of Health and Human services study that examined whether Medicare money should be spent on discouraging alcohol use made one startling discovery: Drinking wine can reduce annual health care costs.

Analyzing data during a five-year period for more than 4,000 relatively healthy adults, the department determined that insured light and moderate wine drinkers can each save Medicare about \$400 in health care costs per year.

The subjects of the study were monitored for medical treatments, hospitalizations, length of stay and costs of each stay. Those who drank six to 13 glasses of wine per week had the lowest Medicare costs in comparison to nondrinkers or heavy drinkers. Moreover, non-drinkers and heavy drinkers cost Medicare approximately the same amount of money, the study asserted. Needless to say, Medicare will not be spending any money on an anti-wine drinking campaign.

The study's results were a major coup for wine health advocates. But they also call to mind other medical findings that give credence to the notion that wine can be beneficial to your health and, by extension, to your wealth.

### **Matters of the Heart**

The main health benefit of moderate red wine consumption appears to be related to its effect on reducing the development of atherosclerosis, the accumulation of fatty plaques, in the blood vessels, particularly the coronary arteries that supply the heart. These

deposits decrease blood flow to the heart and promote the formation of vessel-blocking clots, which can cause heart attacks.

The latest studies suggest that consuming alcohol (especially red wine) may also reduce the incidence of coronary heart disease. Several studies have demonstrated that resveratrol, which is found in the skin of red grapes, is an effective antioxidant and protects cells against cellular age-related breakdown. Reduced platelet aggregation (clotting) has also been demonstrated in studies on resveratrol, further contributing to its prevention of atherosclerosis and stroke.

### **Live Long and Prosper**

Back in 2003, I reported that David Sinclair, a Harvard molecular geneticist, made research findings that showed that a calorie-restricted, nutritional diet with 30% fewer calories than usual, extended the lifespan of rodents by 30-50%.

It appeared that through the activation of the enzyme sirtuin, cellular repair systems were boosted to prolong the healthy life of the cells and prevent their transformation into cancer cells or aged cells. Sinclair hypothesized that resveratrol stimulates the release of sirtuin and the low calorie diet. He went on to demonstrate that in yeast, fruit flies and worms treated with resveratrol, healthy life expectancy could be increased by 80%. This prompted Dr. Leonard Guarente of MIT to suggest, “Even someone who started drinking red wine at age fifty could expect to gain an extra ten years of life.” On went the investigation into resveratrol, a naturally occurring molecule that builds up in undernourished animals and plants attacked by fungi – e.g. grapevines. Resveratrol is a polyphenol and polyphenols are already known to be antioxidants protecting against neurodegeneration, cancer and blocked arteries.

### **Why Red?**

The resveratrol content of wine is related to the length of time the grape skins are present during the fermentation process. Thus the concentration is significantly higher in red wine than in white wine, because the skins are removed earlier during white-wine production, lessening the amount of resveratrol extracted. Grape juice, which is not a fermented beverage, does not have a significant source of resveratrol.

In his recently released follow-up study, Dr. Sinclair fed two groups of mice a diet that contained 60% fat, dosing one group with enormous amounts of resveratrol, the equivalent of about 1,500 bottles of red wine for a human. Though both groups gained weight on the fatty diet, the resveratrol mice exhibited none of the symptoms associated with obesity – they stayed healthy and lived 15% longer than the control group, which developed diabetes, enlarged livers and poor motor coordination. Resveratrol appears to protect the body at the cellular level, triggering a gene that repairs DNA damaged in the course of living.

### **Who's Drinking Wine?**

In 2006, a Nielsen market analysis in the U.K. concluded that sales and consumption of wine are greater in Great Britain than beer. ABC News reported on the Foster's analysis results in Australia that also showed that wine has overtaken beer as its greater source of revenue, with wine sales rising to more than \$1.9 billion, compared to beer revenues of \$1.7 billion. Within the past two years, wine has also overtaken beer as the most popular drink (also over soda and bottled water) in France and Italy.

The United States, so far, shows conflicting results. Data released earlier this year by the Wine Market Council showed that younger consumers, in particular, drink either less beer or spirits (or both), but at the same time drink more wine. However, in the newly released 2006 Gallup annual survey of Americans' alcohol drinking habits, 41% of American drinkers surveyed said they drink beer most often, 33% said wine and 23% said they drink liquor most often.

### **What's Next?**

The American Heart Association has already included moderate wine consumption in its list of heart healthy life habits, along with exercise, blood pressure management, healthy diet and weight control, but some doctors are still reluctant to recommend wine drinking to their patients. Will the new Medicare research be the data that convinces these medical holdouts to "prescribe" wine during yearly health check-ups? Perhaps you'll find out next time you visit your physician.

## **Appetite and Exercise, Resveratrol**

22<sup>nd</sup> March 2007

Mprize

Short answer on resveratrol: MR isn't convinced that just the resveratrol in wine is what gives it its health benefits. He is convinced of the very good epidemiology on red wine, so we drink it. But he's not convinced that resveratrol itself is responsible, in the absence of other ingredients. The recent study on overweight animals and resveratrol doesn't help us out much as we're not overweight. Can't extrapolate to CR people. MR is very conservative about what we take, so until he's quite convinced, we don't take the stuff. He has a very open mind about resveratrol and is following the evidence as it comes in, but as yet, we're not taking it. I'll let you know if that changes. Like all supplement decisions, all factors including diet and lifestyle must be taken into consideration.

I'm sure MR will write in if I've screwed that explanation up somehow... I haven't run it by him, so until he gives the final okay, keep in mind that I may have gotten something wrong.

In other news, I have definitely increased my calories since increasing my exercise. I am averaging more like 1500 these days I think, since my quotidian days are 1300 or so and I've been out to eat quite a few times. I notice that on days when I take Pilates, I am much, much hungrier than on days when I don't. And the difference between 20 minutes on the treadmill and 40 minutes on the treadmill really is about 100 calories worth of

appetite. A few days last week when I didn't go to the gym I noticed that my appetite went back to normal, and that I was easily eating 1200 calorie days. But those workouts up my calorie requirement! That's just common sense, but those of you starting an exercise program or veteran exercisers need to think about it as you decide on target calorie levels. We must avoid setting ourselves up for excess hunger, binges, or overly quick weight loss by setting calorie targets that make sense. Even those of you who are very active outside of a formal exercise program (active jobs, hiking, walking to work or biking, etc.) should think about how many calories you need to eat to sustain your activity. All of us need exercise, preferably the bone building kind as well as cardio and flexibility. So we have to plan for it!

Once I stabilize a bit I'm going to gradually lower my calories again, but for now I'm focusing on making exercise a consistent part of my life and keeping my calories stable, as low as possible while avoiding hunger freak outs, and my nutrition high. More soon on my bad kid friend week upcoming. Sara will understand my mixture of gleeful anticipation and terror as I contemplate not one, not two, but three days out of town with my wine wonk friend. I do adore the guy, but he keeps refilling my glass and I've got to find a way to deal!

## **Blueberries contain chemical that may help prevent colon cancer**

**25<sup>th</sup> march 2007**

**Health News Stat**

A compound found in blueberries shows promise of preventing colon cancer in animals, according to a joint study by scientists at Rutgers University and the U.S. Department of Agriculture. The compound, pterostilbene, is a potent antioxidant that could be developed into a pill with the potential for fewer side effects than some commercial drugs that are currently used to prevent the disease. Colon cancer is considered the second leading cause of cancer death in the United States, the researchers say.

While recent studies have identified a growing number of antioxidants in fruits, vegetables and whole grains that show potential for fighting colon cancer, this is believed to be the first study to demonstrate the cancer-fighting potential of pterostilbene against the disease, the scientists say. Their findings were described today at the 233rd national meeting of the American Chemical Society. March is National Colorectal Cancer Awareness Month.

“This study underscores the need to include more berries in the diet, especially blueberries,” says study leader Bandaru Reddy, Ph.D., a professor in the Department of Chemical Biology at Rutgers in Piscataway, N.J. Although the blueberry compound won't cure colon cancer, it represents a potential new and attractive strategy for preventing the disease naturally, says Reddy, a leading expert on nutritional factors that influence colon cancer development.

Along with scientists Nanjoo Suh, also of Rutgers, and Agnes Rimando of the USDA's Agricultural Research Service (ARS), Reddy and his associates conducted a small pilot

study to determine the effect of pterostilbene on colon cancer. The study included 18 rats that were given a compound (azoxymethane) to induce colon cancer in a manner similar to human colon cancer development. Nine of the animals were then placed on a balanced daily diet, while the other nine were given the same diet supplemented with pterostilbene (at a level of 40 parts per million).

At the end of an eight-week study period, the rats that were fed pterostilbene showed 57 percent fewer pre-cancerous lesions in their colon in comparison to the control group, Reddy and his associates say. Pterostilbene also reduced colonic cell proliferation and inhibited certain genes involved in inflammation, both of which are considered colon cancer risk factors, the researchers say.

Although researchers still do not know the exact cause of colon cancer, the disease has been linked to a high intake of saturated fats and calories, particularly in Western diets. Pterostilbene may be able to reverse this process, possibly by lowering lipids, Reddy says. He cites a recent study by co-author Agnes Rimando, a research chemist at the USDA-ARS, who demonstrated in cell and animal studies that pterostilbene is capable of lowering cholesterol levels. In a related paper also being presented at the ACS national meeting, Rimando demonstrated that blueberries, particularly their skins, can lower cholesterol when fed to animals (see AGFD 038 reference below). More studies on the mechanism of action of pterostilbene are needed, the researchers note.

Reddy recently demonstrated that certain COX-2 inhibitors, anti-inflammatory drugs that are used for pain and arthritis, were capable of preventing colon cancer in animals. But studies by others have shown that COX-2 inhibitors also can increase the risk of heart attacks and strokes when used in high doses. Combining pterostilbene with these COX-2 drugs could allow them to be used in lower doses, reducing their risk of adverse side effects, Reddy says. More studies are needed to determine the compound's efficacy and potential for toxicity, he notes.

Pterostilbene is an antioxidant that is similar to resveratrol, an antioxidant identified in grapes and red wine that also is recognized for its anticancer properties. Pterostilbene also is found in grapes, but it is more abundant in blueberries, the researchers say. In studies by other researchers, blueberries also have shown promise for protecting against memory loss and heart disease. In general, a diet rich in fruits, vegetables and grain is recommended by health experts for the prevention of colon cancer. Funding for this study was provided by the National Cancer Institute.

## **Groundnut Oil**

26<sup>th</sup> March 2007

Cybernoon.com

Which oil do I use? This is a common question that I hear nowadays... there are so many facts being printed, so much variety and so many brands available that one really gets confused about which oil to use.

Which oil do I use? This is a common question that I hear nowadays... there are so many facts being printed, so much variety and so many brands available that one really gets confused about which oil to use. Choosing the right oil has become a tough task. Let's have a look at groundnut oil and its benefits to us! Also known as peanut oil and is extracted from one of the world's most popular crops.

Most people are amazed when I mention groundnut and are quite reluctant to use it. The common myth is that it is weight putting and raises cholesterol. As a matter of fact in addition to bioactive fatty acids groundnut oil contains lipid-soluble compounds such as tocopherols, phytosterols, resveratrol and squalene, which have a number of health benefits for us.

Phytosterols were first recognized in the 1970s for their ability to absorb dietary cholesterol in the blood, thereby protecting against cardiovascular diseases. Phytosterols are found in high concentrations in ground nut oil.

Peanuts is the common man's walnut. It not only lowers cholesterol but also recent research has shown that these phytosterols:

Inhibit cancer growth

Protect against heart disease by lowering high cholesterol levels caused by either dietary habits or because of genetic factors and

Even protect from colon, breast and prostate cancer.

Groundnuts also have a high amount of antioxidants and are an extremely good source of Vitamin E which is anti-aging.

They are a rich source of proteins (roughly 30 grams per cup after roasting) and Monounsaturated fat. Latest research on peanuts and nuts in general have shown their health benefits. Ground nut oil- is superior to low - fat diets for heart health. The presence of peanuts, peanut oil and peanut butter in the diet reduced the risk of heart disease by 21 per cent. They are also a significant source of resveratrol, a chemical studied for potential anti-aging effects.

Like any other oil or ghee 1 teaspoon of ground nut oil is 45 calories. It is always nice to eat oils which are grown in your region because it suits the climatic conditions and our bodies are genetically tuned to it for generations.

What's more! For those pedantic flavor freaks, they can Cook, Fry and Sauté or even Dress their salad with groundnut oil since, it does not absorb or transfer flavors from food and it does not require any artificial additives. The right choice of oil in moderation is favorable to health!

**Food enhanced with isotopes could increase lifespan**

26<sup>th</sup> March 2007

The Money Times

Food enriched with specially developed proteins could add at least 10 years to human life span, a team of scientists led by Mikhail Shchepinov, formerly of Oxford University, claimed after demonstrating the concept in worms.

Researchers say that in the small scale studies they noticed that the worms' life spans were extended by 10% when they fed the nematode worms, used extensively in ageing research, nutrients enriched with a heavy isotope of hydrogen, deuterium, hoping that the same can help extend human life and reduce the risk of cancer and other diseases of ageing.

Researchers believe that steaks and chicken fillets laced with rare, heavy forms of elements, "isotope-enhanced" proteins, could strengthen cells and protect them against oxidation, caused by highly-reactive particles, free radicals that are released in the body as a by-product of biological processes in our cells.

An isotope of an element is produced by changing the number of neutrons in its nucleus. While hydrogen has one neutron, deuterium, or heavy hydrogen, has two.

Food enriched with isotopes is thought to produce bodily constituents and DNA more resistant to detrimental processes, like free radical attack. The heavy isotopes extend lifespan by making bonds within the delicate molecules inside and around our cells harder to break. "Because these bonds are so much more stable, it should be possible to slow down the process of oxidation and ageing," he said.

The isotopes could be used in animal feed so that humans could get the "age-defying" isotopes indirectly in steaks or chicken fillets, for instance, instead of eating chemically enhanced products themselves, an occasional top-up would be sufficient to have a beneficial effect, Shchepinov says.

The concept received a mixed reception from ageing experts in the field. Impressed with the isotopic approach, Aubrey de Grey, the Cambridge-based gerontologist, says it could be very relevant to the rates of several chemical and enzymatic processes relevant to ageing, "It is a highly novel idea," he says.

"But it remains to be seen whether it can be the source of practicable therapies, but it is a prospect that certainly cannot be ruled out," he added.

For some deuterium is toxic, if consumed in moderate quantities, while for others it would be almost impossible to consume the right amount of fortified food to have a beneficial effect.

Charles Cantor, a professor of biomechanical engineering at Boston University, said, "Preliminary data indicates that this approach can potentially increase lifespan without adverse side effects. If this is borne out by further experiments the implications are profound."

In November last year, a landmark US study carried out by the Harvard Medical School and the National Institute on Aging, linked the red wine to the human life span. In their study on mice that time, the US researchers had found that a substance, called Resveratrol, a polyphenolic compound which lies in the skin of red grapes and, therefore, in red wine, has survival benefits in a mammal. In the experiment the researchers had found that the obese mice treated with Resveratrol had a median increase of about 15 percent in lifespan.

## **Dr. Andrew Weil debuts in the Vancouver Sun**

31<sup>st</sup> March 2007

Vancouver sun

The author, physician and one of the 100 most influential people in the world in 2005 according to TIME begins a weekly column in the Sun. Pick up Arts & Life every Monday for more of Andrew Weil's wellness.

Q: In view of the study showing that the resveratrol in red wine is so good for you, do you recommend drinking more wine? Taking supplements? If so, how much?

Andrew Weil: The study you refer to found that resveratrol, an antioxidant found in red wine and in the skin of grapes, prevented the negative health effects of weight gain in mice --enlarged livers, high insulin levels and diabetes -- and reduced the risk of death by 31 per cent.

Researchers from Harvard Medical School and the National Institute on Aging gave resveratrol to mice to see how it would affect those fed a high-fat diet (60 per cent of calories came from fat) compared to mice who got the high-fat diet but no resveratrol and mice fed a healthy (for a mouse) diet. In addition to living longer and avoiding the perils of a high-fat diet, the mice who received resveratrol also performed better than the other high-fat diet animals in the study on tests of balance and coordination as they got older. Exactly how resveratrol worked to benefit the mice isn't known, but earlier research suggested that it can mimic the effects of caloric restriction in extending longevity. We've long known that mice fed a nutritious diet that contains 40 per cent fewer calories than a standard mouse diet will live up to 50 per cent longer than those that get the usual complement of calories. The gene that controls this process is called SIRT-1. Researchers trying to figure out how to activate SIRT-1 have been looking at resveratrol as the answer. This new study didn't show specifically that resveratrol activated SIRT-1, but findings to be published soon are expected to address this issue.

To get the resveratrol dose given to the mice in this study (24 mg of resveratrol per kilogram of body weight), you would have to drink far more wine than is sensible, or even possible, for a human being to drink. If you do drink, switching to red wine might be a healthier option than other forms of alcohol, but if you don't drink, resveratrol is not a reason to start.

The lead author of the study, David Sinclair, told The New York Times that he has been taking resveratrol at a daily dose of 5 mg per kilogram (mice fed that amount in a follow-

up trial did better than mice on a standard diet but not as well as the mice that got 24 mg per kilogram). Dr. Sinclair also said he is having a physician check his metabolism regularly because of concerns that impurities in the supplements could prove harmful. So far, he's had no problems.

Ongoing safety testing should tell us how much resveratrol is safe for human consumption. Resveratrol supplements are available, but since they're unregulated by the FDA, we don't know if they really contain the dose listed on the label.

I doubt that you could get a dose equivalent to that fed the mice from currently available supplements, but you can obtain resveratrol simply by eating more fruits with deep red and purple colour, such as grapes, blueberries, raspberries, blackberries and cranberries. Some supplements made from grape seeds and red wine claim to provide resveratrol, but don't tell you how much.

I think we'll have to wait for more research and better products.

## **Sales of Red Wine Surge on Reports of Health Benefits**

3<sup>rd</sup> April 2007

Food Ingredients FIRST

Sales growth of red wine outpaced sales growth of the total category by 40% in the 20 weeks ending March 10, according to figures just released by The Nielsen Company. The positive numbers, showing red wine dollar sales up 8.5% versus total wine sales up by 6.0%, reflect increased attention to the potential health benefits of red wine after two prominent medical organizations released favorable reports in early November.

"The November studies from the Harvard Medical School and the National Institute on Aging garnered significant positive attention for red wine," said Danny Brager, vice president, client service, Nielsen Beverage Alcohol. "Our latest figures show that the extensive coverage, including the February 2006 cover of Fortune Magazine, which proclaimed 'Drink Wine and Live Longer', may be impacting consumer choice within the wine category. As consumers search for products that promise better health and guard against aging, it would be reasonable to assume that recent favorable press has tipped some decisions towards red wine."

In the 20-week period ending March 10, red wines accounted for 52.9% of table wine dollars, up from 51.5% in the comparable period last year.

In early November, newspapers and media outlets nationwide covered medical studies finding that daily doses of resveratrol, a substance in red wine, may slow the aging process. The most recent Nielsen figures are in sharp contrast to the full-year results ending in October 2006, just before the studies were released. Until then, white wine growth at 9.3% was outpacing red wine increases of 8.4%. Since then, red wine dollar gains of 8.5% are in significant contrast to white wine increases of 4.8%. In even sharper

contrast, blush wines sales dollars shrunk by -2.8% in the 20 weeks through mid-March versus the same period a year ago.

The top two red wine varietals -- Cabernet Sauvignon and Merlot -- experienced surges in volume growth for the 20 weeks ending March 10, up 12.9% and 5.3% respectively, while Pinot Noir's +24.0% volume growth leads all others in percentage gains, as the halo effect from the popular 2004 movie "Sideways" continues.

"The bump in sales from the recent health-related press only adds to the overall strength of the wine category," Brager said. "Both ends of the age spectrum have been drawn to wine in recent years. The younger, millennial generation, once a surer bet for domestic beers, are increasingly turning to wine and other adult beverages, while boomers and seniors, who often have significant discretionary incomes, may be especially interested in the health effects of red wine."

Brager also noted that the wine industry has been very successful at making their products accessible to wider groups of consumers, broadening sales in grocery, convenience stores and other channels, benefiting from regulatory changes that allow direct shipping, while also capitalizing on new and more convenient packaging innovations, such as screw tops and premium boxed wines.

"At the same time, we're seeing many consumers 'drinking better,' trading up to more expensive, premium brands," Brager said. "Based on our comprehensive review of the numbers through mid-March of this year, we are seeing continued favorable trends for wine in general, and particularly for red wines. The health benefits -- real or perceived -- will continue to favorably impact red wine consumption."

The results are from The Nielsen Company's 2006 Beverage Alcohol Annual Review, an annual, in depth performance study for the Wine, Beer, Flavored Malt Beverage and Spirit categories across all retail channels tracked by Nielsen.

## **Peanut butter good for gaining muscle**

The Daily Evergreen

Any nutritionist will tell you that eating well is half the battle of gaining muscle. Eating the right foods in the right proportions at the right times is critical to an increase in muscle mass. Snacking on the wrong foods, such as candy or chips, can deter gaining muscle by providing extra calories and offering no useful energy or protein. Peanut butter is a great snack that can provide you with some extra protein and calories you need to go the long haul at the gym, especially if your goal is gaining size and muscle.

Many people look at peanut butter in a negative light because it is high in calories and fat. However, most of these fats are monounsaturated fats, the same fats in olive oil that are the commonly coined "good fats." These fats can actually help lower cholesterol. According to Bodybuilding.com, peanut butter is also a good source of vitamin E, folate,

magnesium and resveratrol – all of which are nutrients that have been linked reducing the risk of heart disease.

Peanut butter is high in calories, but this by no means makes it unhealthy. I wouldn't recommend downing spoonfuls of peanut butter if your goal is to lose 10 pounds, but for those trying to gain a little muscle mass, peanut butter is an excellent way to fuel your body with the energy it needs. Peanut butter is also cheap when compared to alternate methods of "fueling" a workout, such as pricey energy bars or protein smoothies.

"I actually just like peanut butter because it tastes good," senior history major Taylor Sorensen said. According to Men's Health magazine, eating peanut butter may even be associated with increasing your body's production of testosterone, which in turn can lead to greater muscle gains.

The calories, protein, vitamins, minerals and low cost of peanut butter provide a simple and fast way to snack healthy during the day.

### **The new wine alternative: Blueberries rich in same healthy compounds**

11<sup>th</sup> April 2007

RealAge.com

You don't have to pour red wine on your Cheerios to get the heart-healthy goodness of resveratrol in the morning.

Bring blueberries to your breakfast table instead. Blueberries are rich in the same potent anticancer and heart-protective resveratrol compound found in abundance in red wine.

Blueberries and other berries of the same species are known for their antioxidant prowess, thanks to the fact that they're brimming with phenols. Some of the phenol compounds recently identified in different blueberry species include not only resveratrol but also piceatannol, a cancer-fighting phenol, and pterostilbene, a phenol credited with helping control blood sugar.

The latest research on blueberries suggests that the combination of health-promoting substances found in blueberries may work synergistically to dramatically slash disease risk. That's probably why studies link the berries to better brain function, lower cancer risk and possibly even improved stroke outcomes.

### **Resveratrol Content Varies Among Red Wines**

20<sup>th</sup> April 2007

ScienceDaily

Red wine is being widely touted for its health benefits, but not all red wines may act the same according to researchers at the University of Hertfordshire

Dr Richard Hoffman and his Erasmus student, Conny Johansson are using the University's new chemistry laboratories to test a random selection of red wines to determine their levels of resveratrol.

Resveratrol is a natural antioxidant found in red wine and red grape skins, known to protect against a range of illnesses and diseases including neurodegenerative diseases such as Parkinson's or other dementias, cancer and heart disease and more recently documented for its role in extending lifespan.

It is also found in peanuts and Dr Hoffman and his team are also currently examining their anti-cancer properties. According to Dr Hoffman, although the health benefits of resveratrol found in red wine have been well documented, no one has systematically measured its levels in particular wines before.

“As a result, they assume that all red wines are the same, but this is certainly not the case as the levels of resveratrol vary.”

Dr Hoffman and Mr Johansson are using new state-of-the-art High Performance Liquid Chromatography (HPLC) and Liquid Chromatography Mass Spectrometry (LCMS) to separate and collect the compounds found in the wines.

They plan to be able recommend the healthiest bottle of wine among those they have tested. They also aim to work with wine suppliers and retailers so that they can persuade them to put health indicators on their products.

“The long-term aim is for people to be able to go along to the supermarket and to be able to know at a glance the levels of resveratrol contained in the wines they are choosing,” said Dr Hoffman

## **How saintly is your Shiraz ?**

20<sup>th</sup> April 2007

BBC Focus

*Red wines should carry health indicators, say researchers*

The health benefits of red wine have been widely documented, but in order to get the most goodness from your glass, you may need to choose your bottle carefully. Resveratrol is a natural antioxidant found in red wine. It is known to protect against a number of diseases, including Parkinson's, cancer and heart disease and has been shown to play a role in extending lifespan.

But Dr Richard Hoffman, of the University of Hertfordshire, says that while the health-giving properties of resveratrol have been well studied, no-one has systematically measured its levels in different brands.

“As a result, they assume that all red wines are the same, but this is certainly not the case as the levels of resveratrol vary,” he says.

Dr Hoffman's team is comparing the levels of resveratrol in a random selection of red wines using liquid chromatography techniques to separate and collect the compounds in them.

As a result of their research, they plan to persuade wine suppliers and retailers to put health indicators on their products.

Dr Hoffman says, "The long-term aim is for people to be able to go along to the supermarket and to know at a glance the levels of resveratrol contained in the wines they are choosing."

### **Resveratrol, a heady vintage**

Anti-ageing compound in red wine might help you live healthier, longer.

29<sup>th</sup> April 2007

The Star online

A GLASS of red wine may not only complement your meal, it may also buy you some time to enjoy more out of life. Studies to date show that 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 70%, worms by 18% and fruit flies by 29%. Early last year, Italian researchers discovered that resveratrol can extend the lifespan of turquoise killifish by 50%. Killifish live 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, vertebrates, are far above yeast, worms and fruit flies in the evolutionary tree

Research shows resveratrol's anti-ageing ability is due to the activation of the longevity gene. It 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 human will take more than 100 years to complete. Since humans share many genes in common with even the simplest of organisms such as bacteria and worms, it is likely that the studies in animals may have similar results in human.

What is also interesting about resveratrol is that it has many effects such as anti-ageing, antioxidant, anti-inflammatory, promotes anti-cancer activities and so on. These properties represent many of the known risks for developing different age-related degenerative diseases.

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<sup>1-3</sup>.

In August 2006, researchers at Boston University discovered that resveratrol given to mice increased their insulin utilisation. Resistance to insulin is largely responsible for type 2 diabetes. They found resveratrol in mice activated the AMP enzyme better than some commonly used anti-diabetic drugs. Resveratrol promoted utilisation of insulin and overcame insulin resistance, believed to be responsible for most cases of adult-onset diabetes

Recent studies suggest that the anti-ageing properties of resveratrol might help prevent or ameliorate (to make more tolerable) 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.

Recent scientific studies suggest that adding resveratrol to the cells that create amyloid-beta peptides (and as a result the destructive plaques) result in significantly lower levels of the amyloid-beta peptides in these cells.

“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.”

In November 2006, in a study led by Johan Auwerx at the Institute of Genetics and Molecular and Cell Biology in Illkirch, France, mice were out on a high-fat diet. After three weeks, the mice on the resveratrol supplements weighed only about 20% more than mice on a standard diet. But those on the high-fat diet that did not receive the supplement weighed 60% more than the control mice. The resveratrol also improved the rodents' endurance in fitness tests, and seemed to have no toxic side effects.

Resveratrol boosts muscle endurance by increasing the energy-producing components (“power-plants”) within muscle cells, called mitochondria, the researchers believe. Auwerx says that high-doses of resveratrol are needed to trigger the pathway that gives cells more mitochondria. “At very low doses you don't activate the cell machinery to burn energy,” he explains, throwing out the idea that the odd glass of wine might improve athletic prowess.

Also making headlines in November 2006 – scientists at Harvard demonstrated that resveratrol kept overfed mice from gaining weight, turning them into the equivalent of Olympic marathoners, and seems to slow down their ageing process.

Resveratrol seem to protect the mice from the ill effects of obesity and extended their life spans by 31%, raising the tantalising prospect that the compound could do the same for humans and may also help people live longer, healthier lives, researchers reported.

Resveratrol enabled mice that were fed with high-calorie, high-fat diets to live normal, active lives despite being obese – the first time any compound has been shown to do that. Read more in the November 2006 issue of Nature Magazine<sup>5</sup>.

Dr David Sinclair, associate professor of pathology at Harvard Medical School, led a team of researchers from the National Institute on Aging and Johns Hopkins University School of Medicine in Baltimore as well as investigators from Australia and Spain, in making this discovery, published in Nature Magazine.

The only sure way to obtain a certain amount of resveratrol daily is to take a standardised extract. Standardisation ensures a consistent amount of resveratrol with consistent high quality. The richest source of resveratrol is from *Polygonum cuspidatum*, also known as Japanese knotweed.

## **Vitamin Extends Life of Yeast Cells**

3rd May 2007

Ascribe

Imagine a vitamin that directly extends your life span. It's not available yet, but a discovery that a cousin of niacin prolongs life span in yeast brings the tantalizing possibility a step closer.

The research, reported in the May 4 issue of *Cell*, shows that a new vitamin can extend life span in yeast cells, much like calorie restriction does in animals. This research could pave the way for developing supplements to benefit humans. Dr. Jeffrey Smith, a co-lead author and University of Virginia Health System researcher on the team, notes that "down the road, we hope to use this compound to mimic calorie restriction and possibly help in preventing some aging-related diseases."

"As part of this research, we have also identified a new biochemical pathway in yeast, a relatively simple single-cell organism. This newly discovered pathway has the potential to similarly affect life span in other organisms, including worms, fruit flies, and mice," says Smith, UVA associate professor of biochemistry & molecular genetics. "Now we know there are two pathways that can function in the life span expansion of these cells."

Radical calorie reduction can extend life. Dieting or fasting mice live longer and lowering the glucose that yeast grow on extends their life span, according to Dr. Charles Brenner, associate professor of genetics and of biochemistry at Dartmouth Medical School, who co-led the research team.

"If we could do this in humans -- give people a drug or vitamin that would mimic effects of calorie restriction without having to skip lunch -- we would be able to provide some of the benefits of calorie restriction, which are pretty striking in model organisms," said Brenner.

Many benefits depend on a family of proteins called sirtuins, dubbed anti-aging gene products for the important roles they play in longevity and energy expenditure, although the precise mechanisms are still being figured out.

The team found that providing the newly discovered vitamin activates the yeast anti-aging gene product Sir2, which resembles sirtuins found in humans. The new work builds on Brenner's prior discovery of the vitamin, termed NR (nicotinamide riboside), a natural product found in milk. Like the B3 vitamin, niacin, NR is a precursor to a versatile cellular factor that is vital for all life.

The factor, called NAD, short for nicotinamide adenine dinucleotide, is elevated by calorie restriction in the brain and liver of rodents. So the researchers set out to develop an intervention to elevate NAD levels, using yeast cells, whose genes are easy to manipulate. "It's surprising that no one was able to elevate NAD with a small molecule before," Brenner said.

The team discovered two pathways that allow yeast to raise NAD levels with NR, improve their control of gene expression and live longer in the presence of high glucose. One of the pathways is new; the other was previously identified by Brenner's lab.

At the molecular level, elevating NAD to turn on Sir2 actually enables the yeast to silence genes that are not supposed to be expressed. In any organism, not all genes are on at once; in yeast, there are sets of genes that Sir2 normally represses.

"We showed that that we could improve Sir2-dependent gene silencing with NR and increase the longevity of yeast grown in high glucose conditions," Brenner said.

To test for Sir2 gene repression, the investigators found conditions in which wild-type cells can't accomplish normal gene silencing. Then, when they take up NR through one of the pathways Brenner's team discovered, Sir2 gene silencing is restored, and yeast are rejuvenated. Yeast cells formerly capable of dividing only 13 times, divided more than 23 times when given NR.

Deletion of either pathway makes NR only half as effective as it is when both pathways are intact. So yeast cells seem to use both pathways equally well to lengthen their life span. The first NR pathway, described in 2004, consists of a gene common to yeast and humans. In fact, that gene is activated in damaged neurons in order to allow NR to protect against loss of axons. The second NR pathway involves three yeast genes, two of which are found in humans.

Granted that the human anti-aging apparatus is more complex, but animal studies indicate potential. Perhaps the best known sirtuin activator is the red wine compound resveratrol. Overfed mice on high dose resveratrol have healthier livers, better endurance and possibly longer life span. While resveratrol and NR work through different mechanisms to increase sirtuin activity, the two compounds could be complementary or synergistic.

UVA Health System researchers in 2004 learned how resveratrol helps to starve cancer cells by inhibiting the action of a key protein that feeds them. They used physiologically-relevant doses of resveratrol and found dramatic effects on human cancer cells.

More testing remains for NR in humans. As a natural product found in milk, the researchers expect NR to be much safer than most drugs, and to be a more specific remedy than most vitamins.

Though aging itself is not a disease, Brenner anticipates applications in conditions associated with aging including help for neurodegenerative diseases and metabolic syndrome (which can be a risk for diabetes), and elevating levels of good cholesterol. There are also indications that NR could be a treatment for one type of Candida yeast infection.

## **Red Wine Protects the Prostate, from the Harvard Men's Health Watch**

21st May 2007

PRNewswire

Researchers have found that men who drink an average of four to seven glasses of red wine per week are only 52% as likely to be diagnosed with prostate cancer as those who do not drink red wine, reports the June 2007 issue of Harvard Men's Health Watch. In addition, red wine appears particularly protective against advanced or aggressive cancers.

Researchers in Seattle collected information about many factors that might influence the risk of prostate cancer in men between ages 40 and 64, including alcohol consumption. At first the results for alcohol consumption seemed similar to the findings of many earlier studies: There was no relationship between overall consumption and risk. But the scientists went one step further by evaluating each type of alcoholic beverage independently. Here the news was surprising -- wine drinking was linked to a reduced risk of prostate cancer. And when white wine was compared with red, red had the most benefit. Even low amounts seemed to help, and for every additional glass of red wine per week, the relative risk declined by 6%.

Why red wine? Doctors don't know. But much of the speculation focuses on chemicals -- including various flavonoids and resveratrol -- missing from other alcoholic beverages. These components have antioxidant properties, and some appear to counterbalance androgens, the male hormones that stimulate the prostate.

Many doctors are reluctant to recommend drinking alcohol for health, fearing that their patients might assume that if a little alcohol is good, a lot might be better. The Harvard Men's Health Watch notes that men who enjoy alcohol and can drink in moderation and responsibly may benefit from a lower risk of heart attack, stroke, diabetes, and cardiac death.

## **Micronutrients and phytochemicals offer health benefits**

23rd May 2007

Life/Travel

You don't hear the terms macronutrients or micronutrients tossed around much. But you probably know what they are, all the same.

Macronutrients are the fats, carbohydrates and protein that provide energy, or calories, to our bodies. They're called macronutrients because they're large molecules and they're needed in greater quantities than the micronutrients.

Micronutrients are the vitamins and minerals required to regulate body processes. We need them, but in relatively small amounts.

"Unlike the macronutrients, the micronutrients don't provide any calories," says Dallas registered dietitian and nutrition consultant Neva Cochran.

More recently, health experts have begun to talk about phytochemicals, substances found in plants that have health benefits for people, although the body doesn't require them. Resveratrol, for example, which is found in grapes and wine, may play a role in heart health.

Micronutrients and phytochemicals are like riders on the macronutrients.

When foods, such as sugar, are said to have empty calories, it means there aren't any micronutrients or phytochemicals in addition to the energy.

"The best way to get all the macronutrients, micronutrients and phytochemicals you need without getting too much of any one is to eat a variety of foods from all food groups," Ms. Cochran says.

"Build your diet on a base of grains, fruits and vegetables," she says.

"Add moderate amounts of lean meat, poultry, fish or low-fat or nonfat dairy products, and take it easy on the fats and sugars."

## **Wine's benefits from the outside in**

30th may 2007

Canada.com

From lowering cholesterol to preventing heart disease and even possibly Alzheimer's, there's no shortage of studies touting the benefits of wine. But now even teetotalers can capitalize on the perceived relationship between wine and good health, thanks to an emerging trend in spa treatments.

It's called "vinotherapy," and while the name might evoke the idea of drowning your sorrows away in a carafe of shiraz, the treatments allow spa-goers to reap some of the benefits of wine without so much as a sip of anything alcoholic.

"Vinotherapy has become the rage in the spa industry over the last couple of years," said Daphne Swenerton, the director of spa services at Niagara-on-the-Lake's Vintage Hotels. The chain's 100 Fountain Spa, located at the Pillar and Post Inn, is the only centre in Canada that specializes in the unique treatments. "There are certainly lots in California in the Sonoma Valley and Napa Valley regions," said Swenerton, "but I don't know of any in the Okanagan and I'm not familiar with anything else like it here in Ontario."

Swenerton's spa collects grape skins from local wineries, pulverizes them into a powder and ships them off to a lab in Vancouver, where they are made into products. Treatments take the form of facials, body wraps, even a so-called "purple feet" pedicure, where grape skins are blended with bamboo and essential oils to create a thick exfoliating scrub. And no, you won't look like you soaked your feet in a barrel of merlot after you're done - the scrub doesn't leave a trace of colour on the skin.

The benefits of these treatments come from the same compounds that have made wine a headline-maker - namely, wine's polyphenols and resveratrol. While polyphenols are also found in other plant-based products, they are naturally more concentrated in wine grapes, Pinot Noir in particular. At 100 Fountain Spa, the products come from all sorts of different types of wine grapes, from ice wine to merlot.

"When we do these treatments externally, the benefits go internally," said Swenerton. "They are soaking into the layers of the skin and so the anti-aging benefits, the antioxidants, are going from the outside in."

According to Swenerton, the antioxidant properties of grapeseed extract are up to 20 times more powerful than those of vitamin C. And then there's the fact that the compounds in wine have been shown to improve circulation and reduce the signs of aging. "All these studies add up," she said.

While the research on wine - whether used internally or externally - continues to grow, Swenerton hopes enjoyment is still the first thing people think of. "I'd say (health) is still the second thought people have about wine. And let's be honest - it might be a justification, but the benefits are certainly there."

## **The grapes of youth**

4th June 2007

The Independent

"Vintage wine from fine old kegs/ From the brim to the dregs/ And it poured sweet and clear/ It was a very good year..." Sinatra was, of course, singing about his twilight years, but he might just as well have been serenading 2007. Not in terms of the wine produced by vineyards, but rather the skincare products.

Following the lead of the French company Caudalie, which has been producing skincare using grapes from the Château Smith Haut-Lafitte vineyard in Bordeaux since 1995, this spring has seen the launch of two luxury skincare products from historic vineyards.

First, in April, came Dior's L'Or de Vie, literally, "the gold of life": a £250 premium skin cream derived from the vineyards of Château d'Yquem. The vineyard, owned since 1996 by the luxury-goods company LVMH, was the only wine producer in the Sauternes region to be classified Premier Cru Supérieur back in 1855. Even if you don't know your wine, it's clear that this is the good stuff. So good that now you can enjoy the fruits of the vine in your beauty regime - L'Or de Vie is made from the same Sauvignon grapes as the wine.

Chateau d'Yquem is not alone in contributing both to bottle and beauty: thousands of miles away, in the Napa Valley, California, another company is breaking beauty boundaries with its new skincare line. The Robert Mondavi vineyard, founded in the 1960s and producer of fumé blanc and chardonnay, also contributes to the production of Davi skincare, most notably its Le Grand Cru skin cream, at £90.

Carlo Mondavi, chairman and co-founder of Davi, explains his transition from winemaker to beautician: "My roots are in Napa, having a hand in everything at the winery, from picking grapes to making wine. One day, I was shovelling the pomace [a by-product of grape fermentation] out of a 5,000-gallon oak fermenter, and I started questioning what we do with it.

"One of the benefits of wine is that it's packed with antioxidants, a key factor in anti-ageing for the skin, and for general health. After confirming that the pomace contained numerous antioxidant ingredients, I sat down with my grandfather to discuss doing skincare, and he gave his blessing."

No one can escape the plethora of beauty advertisements that reference antioxidants, usually for their power to eliminate free radicals, but rarely can anyone explain what a free radical actually is. Mathilde Thomas, founder of Caudalie, can: "A free radical is generated by sun, pollution, smoke, or if you don't sleep enough or are stressed. It's a molecule that attacks your skin cells, first attacking the membrane, then the cell itself. It's a really fast chain-reaction.

"It's important to have a few free radicals in the body, but not too many, because they are responsible for four out of five wrinkles, and 80 per cent of ageing. We also have a few antioxidants in our bodies naturally."

Caudalie's antioxidants are derived from white-grape seed polyphenols, which, as Thomas explains, "are 10,000 times more efficient than vitamin E in combating free

radicals, and very concentrated - it takes 1,000lb of white-grape seeds to make 1lb of polyphenols.

"We use white grapes," she continues, "because when you produce red wine, you let the whole berry macerate for three weeks in a wooden vat, and all the polyphenols go into the wine - that's why it's good for you! So we only use the white grape, and as we don't have enough grapes at the château, we buy a lot from the Champagne region."

Champagne for the skin sounds gloriously decadent. Red wine for internal health, white wine for external? "I wouldn't put white wine on my skin!" says Thomas, laughing. "It's 14 per cent alcohol! No, it's just the grape seeds we use. Having our own vineyard is great because we know all the vines by heart."

Conversely, Mondavi says that, in Davi products, "95 per cent of the grapes are red. We do blend Moscato into our products, but that's the only white grape used. My philosophy is that red wine is key to a long and healthy life. Wherever I am, I start my day with Davi Reserve Shave Cream [£13] and Coastal Vine After Shave [£18]; and at the end of the day, I enjoy a few glasses of red wine!"

The key Davi ingredient is resveratrol, levels of which differ between grape varieties - presumably explaining the differing uses of red and white grapes between the skincare lines. "Resveratrol is found at its highest level in vines such as Cabernet Sauvignon, Merlot and Pinot Noir," says Mondavi. "The fruit is picked at its most perfect state, when the sugars, acids and tannins are in balance, the seeds are a nice chestnut-brown, and the pulp has separated from the seeds." During the maceration and fermentation process, the level of resveratrol is heightened throughout the wine. "After maceration, the wines are racked off and the Davi secret ingredient is harvested."

Both ranges use wine terms to name their products: *la caudalie* is a French term that describes the duration of wine's flavours after tasting. Similarly, Davi's secret ingredient is called "meritage". "It's a wine term," says Mondavi, "a style of wine that blends different grape varieties. As we're wine-inspired, we use the term Meritage Complex to describe the ingredient we incorporate into every product. It's a micro-encapsulated antioxidant containing grape leaf, fermented grape extract, green tea, bilberry, blackcurrant oils, olive, raspberry, rosemary and soybean". In other words, these are ingredients that you can actually pronounce, and of which you can identify the origins.

Caudalie is equally natural: "On average, our products contain 97 per cent natural ingredients, with no parabens or phenoxyethanols, which are harmful preservatives. We don't use petrochemical-derived mineral oils, no sodium lauryl sulphate, no animal products, our emulsifiers are natural, we don't test on animals..." Thomas pauses. "I could go on and on!"

The all-natural policy pays off in the scent of both product ranges: Davi's Vine Fresh SPF30 Lotion (£25), with vitamin E and shea butter, is as far from the average suntan cream smell as you can get. A pale, buttercream-yellow, dissolving clear on the skin, it

smells just as you would imagine a stroll through a Californian vineyard to, should you be lucky enough to experience such a thing. Caudalie's nourishing antioxidant Hand and Nail Cream (£10), with shea butter and avocado extract, is scented with orange pulp, making hands delightfully soft, and without the chemical tang of so many products.

With so many vineyard skincare products, choosing which to use is like picking from a great wine list, without pressure from a sommelier. Does the occasion call for a magnum of champagne, or a bottle of New World wine? A drop of Dior's face elixir, or a handful of Caudalie's Cabernet scrub (£15)?

Whichever you choose, red grapes or white, vintage or New World, you can be sure that, when it comes to skincare, it's a very good year indeed.

## **A tittle a day keeps the doctor away**

7th June 2007

Ulster Herald

You've probably heard that red wine is good for your health, but don't pop that cork too soon. Before you raise your glass, here are some things you'll need to know.

### HEALTH BENEFITS OF WINE

Red wine is the most heart-healthy alcohol. The skin and seeds of red grapes contain a type of antioxidant called flavinoids. It's believed that flavinoids help your heart by:

Reducing LDL (bad) cholesterol

Increasing HDL (good) cholesterol

Reducing blood clotting

Another antioxidant – resveratrol – is found in the skin of red grapes. Researchers believe that resveratrol can slow down tumour growth in some cancers. They also believe it can help prevent nerve cell damage and death, which could help treat diseases like Alzheimer's and Parkinson's.

### TYPES OF WINE

Researchers at the University of California, Davis, tested various wines for their flavinoid levels. The drier red wines had the most flavinoids and white wines had the least. The conclusion was: the sweeter the wine, the lower the flavinoids.

The reason why red wine is better for the heart and arteries than white, or other alcoholic drinks, is related to the antioxidants it contains. These are dependant on the polyphenols and flavinoids in the wine. Polyphenols and flavinoids are compounds produced by plants and have antioxidant activity. Some of their formation may vary according to the nature

of the soil, but most are derived from the biological systems that are active in the grape's skin.

Alcohol in all its forms makes blood clots less likely and it increases the amount of heart-protecting good cholesterol and reduces the amount of the artery-damaging pernicious form of cholesterol. It improves the health of the lining of the arteries. The antioxidants in alcohol have many other advantages but once the intake rises, the benefits conferred on the arteries are obscured by the damage to a person's general health by obesity, liver disease, pancreatitis and even dementia.

## **Red wine, taken in moderation, reduces risk of prostate cancer**

7th June 2007

Gazette online

Men who drink moderate amounts of red wine are only half as likely to be diagnosed with prostate cancer as those who don't drink it at all, according to a report in the June issue of Harvard Men's Health Letter. What's more, the beverage seems to be especially protective against the most advanced and aggressive cancers, lowering risk by about 60 percent.

The key word here is "moderate," meaning four to seven glasses a week. The Harvard report warns that if one glass a day is good, don't assume that two glasses are twice as good. Three Harvard studies have also concluded that those who enjoy alcohol in the same modest amounts benefit from a lower risk of heart attacks, strokes, diabetes, enlarged prostate, and erectile dysfunction.

Earlier research showed that alcohol consumption offered no protection against prostate cancer. But scientists at the Fred Hutchinson Cancer Research Center in Seattle went a little further. They separated the effects of different types of alcoholic beverages on a sample of 1,456 men between 40 and 64 years old. They found that drinking 35 or more glasses of beer a week for eight years or longer actually increased risk of getting the cancer. White wine wasn't much help. But those who averaged four to seven glasses of red a week were 52 percent less likely to get the disease than nondrinkers.

It's a happy conclusion for those who drink red wine in moderation, but no doctor is going to recommend that you start drinking alcohol to protect yourself from prostate cancer. The results come from only a single study; other research may contradict its conclusions as so often happens in medicine. That study, the Harvard publication puns, "is bound to mark an outpouring of new research."

Why red wine?

Why red wine, and not white wine, beer, or hard liquor? The short answer is that no one really knows. Speculation focuses on natural antioxidants such as flavonoids and resveratrol. These chemicals may work against male hormones that stimulate the prostate gland.

Flavonoids are herblike compounds found in many plants. In experiments conducted in test tubes (versus in human subjects), flavonoids reduced the production of PSA, a substance produced by prostate cancer cells. Doctors use high PSA levels in men as a warning sign of the disease.

Resveratrol is abundant in the skins of red (but not white) grapes. Lab tests show that it interferes with the activity of cancer cells in various ways. According to the Hutchinson Cancer Center, it may reduce the levels of male hormones, like testosterone, which circulate in the blood and can fuel growth of prostate cancer cells. The compound is also available in raspberries, peanuts, and dietary supplements.

Resveratrol has been found to extend the lives of obese mice by Harvard Medical School researcher David Sinclair and his colleagues. That discovery, last year, led to a rash of media hype about drinking red wine to help you live longer.

Sinclair scoffs at such an idea, saying that a person would have to drink more than 100 glasses of red wine a day to get the same amount of resveratrol as the mice. But the chemical's ability to put a brake on cell growth turns out to be promising enough for Sinclair to have formed a company, called Sirtris, to look into testing it on other diseases such as diabetes. And some of the people in Sinclair's research lab are taking resveratrol supplements.

#### Obesity link

For the grossly overweight mice, resveratrol decreased their chances of developing age-related diseases by a third (31 percent). Until the same results can be demonstrated in humans, the best way to get the same result is to lose weight by diet and exercise. Studies at Harvard and elsewhere conclude that obese men have a significantly greater chance of developing aggressive and fatal prostate tumors than those who keep their weight down.

“Weight loss may help reduce your risk of prostate cancer, and it will also help protect you from a host of problems, from heart disease and high blood pressure to diabetes and erectile dysfunction,” notes Harvey Simon, associate professor of medicine at Harvard Medical School. Although erectile dysfunction is not life-threatening, the condition lowers the quality of life, so it's nice to know you can get some protection just by walking about 30 minutes a day.

Instead of “buying into a crash diet,” Simon points out, “the best way is to adopt a healthy lifestyle. The key is to burn up more calories with exercise than you take in with food.” And that food should be prostate friendly, the same kind of food that protects your heart. Here are Simon's recommendations: reduce trans fat and saturated fat; keep your calcium intake down (1,000-1,200 milligrams a day); and eat lots of fish, whole grains, vegetables, and fruits. He particularly recommends prostate-friendly cooked tomatoes, but not raw tomatoes or pizza.

And you can wash it all down with a glass of red wine.

## Your best life : 25 ways to optimize your health

22nd June 2007

Ocala.com

The older we grow, the more determined we are to recapture our fleeting youth.

With the average life expectancy for men and women of all races living in the United States at 77.9 years, perhaps it's time to focus on a realistic road to health and long life.

### No. 1: Eat breakfast

Mom was right. "Breakfast is the most important meal of the day," said James Joachim, a primary care physician practicing internal medicine and medical nutrition in Wilmington, N.C. A breakfast high in complex carbohydrates and protein generates energy to kick-start your metabolism and help the body burn fat.

### No. 2: Load up on antioxidants

Bodies exposed to damage from free radicals — renegade atoms that can cause cellular damage — become more susceptible to other problems, from premature aging to cancer. Some studies have shown an antioxidant-rich diet can prevent free radical damage. The main antioxidants are vitamin E, beta carotene and vitamin C.

### No. 3: Move more

According to the U.S. Surgeon General, regular physical activity not only improves the chances of living longer, but also helps prevent arthritis, osteoporosis and diabetes, and relieves symptoms of depression and anxiety. The current recommendation for adults is 30 minutes a day, most days of the week.

### No. 4: Maintain a healthy weight

Make sure your weight is appropriate for your height, age, sex and body frame. The American Institute for Cancer Research reports that having an appropriate body mass, coupled with eating properly and exercising, can reduce cancer incidence by 30 to 40 percent.

### No. 5: Eat six small meals a day

Have you dined out lately? Portion sizes have exploded. Three squares used to be the rule, but doctors and nutritionists now suggest eating four to six small meals a day, or every three hours, to speed up metabolism and burn fat faster.

### No. 6: Know your medical history

One of the most important steps is to know what you're up against. It matters. If, for instance, your grandmother died from breast cancer, be aware that the women in your family have an increased risk for cancer and must take the necessary precautions.

### No. 7: Quit smoking, today

If you started smoking at 20 and you're 40 now, you've taken 15 years off your life, says Demetrius Harvey with the American Lung Association. Smokers, even occasional ones,

are not only more susceptible to developing lung cancer, but their risks of having high blood pressure, a heart attack or stroke also increase. Quit smoking now.

No. 8: Be on pins and needles

Acupuncture as a whole, and as preventative medicine, is a form of total health care that can help you live longer, says William Mead, a chiropractor and acupuncturist in Wilmington, N.C. “It’s energy medicine,” he said. Select a licensed acupuncturist: Ask around for ones who come highly recommended.

No. 9: Go green

Green tea has been used in Asia for centuries to promote good health. It is an antioxidant as well as an anti-carcinogen. Scientists at the University of Texas Center for Alternative Medicine Research in Cancer reviewed 15 studies on green tea. The results — more than half of the studies confirmed that green tea is effective against stomach, lung, gastric, bladder, colorectal and esophageal cancers.

No. 10: Say yes to garlic

Garlic in its natural and capsulated forms can be seen as a near-cure-all, with properties that help ease disease and fend it off. Garlic kills off infection, viruses and bacteria in the body and protects and boosts the immune system. Fresh garlic has also been shown to treat ordinary chest complaints, such as asthma, colds, cough and flu.

No. 11: Get your omega-3

Omega-3s, or essential fatty acids, are just that — “essential” to a healthy body. They aren’t produced by the body and must be supplied in the diet. Omega-3 improves blood pressure, acts as an anti-inflammatory for arthritis and lowers triglyceride levels and bad cholesterol (LDL). It also improves hair quality. Look to the ocean for omega-3. Fish such as salmon is a good source, and fish oil tablets have the same benefits.

No. 12: Protect your lower back

Lower back problems aren’t a symptom of old age. Back pain hits people as young as 20, and there’s no shortage of ways that you can injure your back. The most common trigger is a car accident. Still, many people hurt their lower backs while working and lifting, or playing sports. Recovery from a low back injury or low back discomfort can be as emotionally challenging as it is physically. Loss of function in the back can cause people to become less social, avoid certain activities and even become depressed.

No. 13: Go with the flow, practice yoga

A lot of people think doing yoga is about being a pretzel. But it’s not. It helps to reduce stress, anxiety and depression, relieve chronic pain, relax, be more flexible, lower the heart rate, lose weight, decrease cholesterol, relieve allergy and asthma symptoms. And those are just the physical benefits. Practicing yoga together removes people from the isolation of cubicles and opens up a community for like-minded people to find one another and interact.

No. 14: Say ohmmmmm

Meditation can quiet the rumbling and free the mind from having and obsessing over unproductive thoughts. It can also reduce high blood pressure and stress, and ease depression and anxiety. Meditation is said to be the process of attaining total awareness through the cessation of thought.

No. 15: Wear sunscreen

The Centers for Disease Control and Prevention rates skin cancer as the most common form of cancer in the United States. From 65 percent to 90 percent of cases of melanoma, the third most common type of skin cancer, are caused by exposure to ultraviolet light or sunlight. What's scarier — not even sunscreen is entirely effective in preventing skin cancer. UVA and UVB rays are the culprits that damage skin. Buy a sunscreen that protects against both and that includes zinc oxide or titanium dioxide. Read the labels. The active ingredient still needs to be zinc or titanium dioxide. If zinc is way down the list of ingredients at 1 percent, it's not worthwhile.

No. 16: Moisturize

Cleanse and moisturize your skin daily to give it that extra boost to retain elasticity and texture. Facial moisturizer is a line of defense against daily damage that comes from pollution, sun and makeup. Use products that contain herbal extracts and natural ingredients.

No. 17: Protect your collagen

No matter how diligent you've been about keeping in shape, the wrinkles start showing once you hit 40. That's when collagen, a protein within the body's connective tissue, starts to break down. By 60, it becomes more noticeable. By 80, wrinkles become more folds of skin than fine lines. Again, buy sunscreens that list either zinc oxide or titanium oxide as the main ingredient.

No. 18: Get juiced

Cranberries have free-radical-fighting power. It works in fighting urinary tract infections, and offers other unexpected benefits, such as protection against chronic age-related burdens like loss of memory and coordination. Pomegranate juice contains beneficial antioxidants — polyphenols, tannins and anthocyanins — in higher levels than most other fruit juices, red wine or green tea.

No. 19: Use olive oil

Olive oil is a fundamental ingredient of Mediterranean diets. It's good for the heart and its most healthful component is its percentage of monounsaturated fat — which boosts good cholesterol, or HDL.

No. 20: Red, red wine

Red wine has two beneficial components; both come from the skin, pulp and seeds of grapes. Flavonoids are a form of antioxidant, and resveratrol may help reduce the risk of blood clots. The American Heart Association recommends that you drink in moderation.

Too much wine or other forms of alcohol can increase high blood pressure, obesity, stroke and cancer. Limit yourself to one or two 4-ounce glasses a day.

No. 21: Pass the truffles, please

Eat a small, 1.6-ounce bar of dark chocolate every day. Dark chocolate lowers blood pressure and has been added to the list of antioxidants that can fight free radical damage, according to studies at the University of Cologne in Germany and Italy's National Institute of Food and Nutrition Research in Rome. Dark chocolate also contains flavonoids — but remember to burn those extra calories. A 1.6-ounce bar contains about 210 calories.

No. 22: Be social

Stress and anxiety are killers. Left untreated, it can lead to gastro-intestinal problems, alcohol abuse, depression, panic attacks and insomnia. The remedy? Make time to be social. It is essential to health, happiness and the quality of life. Engage in any assortment of activities once to twice a week, whether it's attending church, going to the movies or joining a book or social club.

No. 23: Pop some aspirin

Studies by the National Cancer Institute have shown that aspirin can treat conditions such as arthritis and has lowered the rates of colon polyps, cancer and colon cancer deaths. Aspirin also has been said to reduce the risk of developing Alzheimer's disease, inhibit blood from clotting and decrease the risk of heart attack and stroke.

No. 24: Make a little love

Sex increases the supply of oxygen to cells, according to the American Academy of Anti-Aging. Regular sex helps balance out bad cholesterol (LDL) and good cholesterol (HDL) — as well as reducing joint pain and headaches. It also relieves stress, protects the prostate gland, wards off depression and increases the level of testosterone released into men's bodies, which helps strengthen bones and muscles.

25. Get your *ZZZZZZZZZZS*

Sleep is restorative. Sleep-deprived people secrete more leptin, a protein hormone that increases appetite. Obesity can bring on a host of other ailments.

## **Gene deficiency is a protective barrier to obesity**

CD38 plays a role in regulating body weight and obesity

26th June 2007

EurekAlert

ROCHESTER, Minn. -- A search for the molecular clues of longevity has taken Mayo Clinic researchers down another path that could explain why some people who consume excessive calories don't gain weight. The study, which was done in laboratory mouse models, points to the absence of a gene called CD38. When absent, the gene prevented mice on high-fat diets from gaining weight, but when present, the mice became obese.

The findings were published this month in the online issue of The FASEB Journal, the journal of the Federation of American Societies for Experimental Biology. The study will appear in the November 2007 print issue of the journal.

“Obesity is a complex problem compounded by multiple factors, one of which is our genes. Genes play a role in about 50 percent of cases, and in this study, we demonstrate that CD38 regulates body weight,” states Eduardo Chini, M.D., Ph.D., an anesthesiologist at Mayo Clinic and corresponding author of the study.

Identifying the signaling mechanisms that lead to obesity caused by a high-fat, high-calorie diet is a critical part of understanding and developing new treatments for obesity, Dr. Chini says.

### THE ROLE OF CD38

Research in animal models has shown that caloric restriction can lower cholesterol and blood pressure -- often considered the biomarkers of aging. In addition, published research in animal models shows that caloric restriction, defined as consuming 30 percent to 40 percent less than your average daily intake, can turn on the SIRT1 gene, one of a family of seven genes linked to longevity.

In addition, recent studies have shown that the chemical receptor PGC1 (peroxisome proliferator-activated receptor coactivator) plays a key role in the development of obesity and control of metabolism. The SIRT genes activate PGC1 and in doing so, can offset the negative effects of obesity -- at least in mice. But how the SIRT-PGC1 reaction works, hasn't quite been explained until now.

In previous laboratory studies by the Mayo Clinic research team, CD38 was shown to be involved in regulating a wide variety of signaling pathways, such as those that regulate energy metabolism. In addition, recent studies in humans also show a possible connection between CD38 and metabolism, specifically metabolic syndrome. Metabolic syndrome includes metabolic-related health issues that usually afflict people who are obese. These health issues include high blood pressure, elevated insulin levels and high cholesterol levels.

In this study, researchers investigated and confirmed that CD38 inhibits SIRT and the expression of PGC1 in mouse models and, as a result, regulates body weight. In the absence of CD38, the SIRT-PGC1 pathway was activated and protected mice models from developing obesity.

### THE STUDY

Researchers studied two groups of mice: one with the gene CD38 and the other without. Each group was fed a high-calorie diet with 60 percent of calories from fat. In a second test, each group was fed a standard diet in which 4 percent of calories came from fat.

As a result, the body fat of mice that carried CD38 and were on a high-fat diet nearly quadrupled and their body weight almost doubled. After eight weeks on a high-fat diet, mice with CD38 began to show signs of glucose intolerance, one of the first indicators of diabetes onset. In addition, this group of mice lived for only four-to-six months compared to the second group of mice that lived for 12 months.

For the group of mice that did not carry CD38, their body fat and weight did not change even though they were on a high fat diet. These mice burned more energy, were leaner and otherwise healthy.

“These changes contributed to the ability of these mice to fend off weight gain despite a high-fat diet and lack of exercise. Together these results suggest that a CD38 deficiency has a protective effect against high-fat, diet-induced obesity,” Dr. Chini says.

## RESVERATROL

Dr. Chini and colleagues also examined the effects of resveratrol in mice. Resveratrol is a naturally occurring substance found in some plants such as mulberries, peanuts and red grapes used to make wine. It has been marketed as a drug that mimics the effects of moderate exercise without the physical act of exercising and also as a longevity drug, despite the lack of evidence that resveratrol is safe and effective in humans.

Mice with CD38 were treated with 30 milligrams (mg) of resveratrol per day. And, to determine the effects of the SIRT genes on obesity, mice without CD38 received the same dose of sirtinol, a drug that shuts down the SIRT genes.

Researchers found that mice with CD38 that were treated with resveratrol for two weeks were protected from high-fat, diet-induced obesity. By contrast, the protective effect against high-fat, diet-induced obesity in the absence of CD38 in mice was invalidated by sirtinol. Mice without CD38 that were treated with sirtinol gained a statistically significant amount of weight when compared with mice without the gene who were not treated with sirtinol.

This data supports the novel notion that CD38 modulates high-fat, diet-induced obesity by a SIRT- dependent mechanism.

“Together these results identify a novel pathway regulating body weight and clearly show that CD38 is a nearly obligatory component of the cellular cascade that led to diet-induced obesity,” the authors write.

The authors say the study’s results are promising and should be explored in follow-up studies that will focus on the quality of life and longevity in mice.

## **Team reports genetic link between aging, neurodegenerative disorders**

A group of enzymes known as sirtuins have gained fame in recent years for their ability to slow the aging process. Now, researchers at MIT's Picower Institute for Learning and Memory and Harvard Medical School report that one particular sirtuin-producing gene is a link between aging and human neurodegenerative disorders.

The work may lead to new drugs against Alzheimer's disease, amyotrophic lateral sclerosis (also known as Lou Gehrig's disease) and other debilitating neurological diseases.

The SIR2 (silent information regulator) gene and sirtuin, the enzyme it produces, promote longevity in a variety of organisms and may be tied to the health benefits of caloric restriction, which delays aging and neurodegeneration in mammals.

In work published in a recent issue of the journal of the European Molecular Biology Organization, Li-Huei Tsai, Picower Professor of Neuroscience in the Department of Brain and Cognitive Sciences, and colleagues reported that SIRT1, the analogous human version of SIR2, "constitutes a unique molecular link between aging and human neurodegenerative disorders and provides a promising avenue for therapeutic intervention."

Progressive loss of nerve cells, or neurons, with age underlies a variety of debilitating neurological disorders, including Alzheimer's and Lou Gehrig's disease, yet few effective treatments are currently available, Tsai said. "In our cell and mouse models for those two disorders, SIRT1 and resveratrol, a SIRT1-activating molecule, both promoted neuronal survival, reduced neurodegeneration and prevented learning impairment," she said.

The latest study is an extension of work reported over the past several years by co-author Dr. David A. Sinclair of Harvard Medical School. He has shown that resveratrol, a natural plant substance found in red wines, is one of a class of chemicals that mimics the effects of a very low-calorie diet, which is known to lengthen the life span of rodents. Scientists say that human life spans could be extended by 30 percent if humans respond to the chemicals in the same way as rats and mice do to low calories.

#### Preventing loss of neurons

SIRT1 is thought to be a key regulator of an evolutionarily conserved pathway that allows organisms to cope with adversity. These genes and the enzymes they produce are part of a feedback system that enhances cell survival during times of stress, especially if that stress is a lack of food.

In the current study, the researchers increased SIRT1 activation in mice. Furthermore, injecting SIRT1 directly into the brains of mice genetically engineered to experience neurotoxic conditions "conferred significant protection against neurodegeneration," the authors wrote.

While SIRT1 is the human counterpart of the SIR2 gene previously studied in rodents, it is common to use the human counterparts of genes for transgenic models for neurodegeneration, Tsai said. "Such an approach may make it slightly more relevant to studying human disease. Likewise, while the mouse version of the gene will probably have a similar effect, our positive results showing therapeutic potential of human SIRT1 overexpression provides a little bit more promise that such an approach may translate to benefits in humans."

Exploring the underlying mechanisms for inducing SIRT1 through neurotoxic stresses and investigating compounds that may activate SIRT1 are among the lab's future goals.

In addition to Tsai and Sinclair, co-authors included Dohoon Kim, a graduate student in the MIT Department of Brain and Cognitive Sciences; Picower Institute technical assistant Matthew M. Dobbin; Picower Institute research affiliate Andre Fischer; MIT affiliate Farahnaz Sananbenesi; Picower Institute research affiliate Ivana Delalle, and other researchers from Harvard Medical School.

## **Magic Pill to Eliminate Disease and Add Years to Life?**

18th July 2007

Medical

ORLANDO, Fla. (Ivanhoe Newswire) -- If it sounds too good to be true, it probably is, right? Wrong, says David Sinclair, Ph.D., of Harvard Medical School. He and his colleagues are developing a pill to prevent age-related diseases like cancer, Alzheimer's and heart disease, and add years to a person's life.

In 2003, Sinclair discovered a molecular compound found in red wine called resveratrol extends the life span of mice by up to 24 percent and up to 59 percent in other animals like flies and fish.

He has since co-founded a company called Sirtris Pharmaceuticals. Sirtris researchers are beginning to run studies on a formulation of resveratrol in people with diabetes, with the goal to lower blood glucose levels.

Dr. Sinclair told Ivanhoe modern medicine is based on treating one disease at a time. But what drugs haven't done is target the natural defense mechanisms of our bodies. He explained, "The body is a pretty clever and complex organism. It's not the molecules themselves that are miraculous. It's the genes that have evolved to protect the body."

The premise behind a formulation of resveratrol is that it activates a gene called SIRT-1, which may regulate lifespan by being activated by caloric restriction. Mice live longer when they have 30 percent to 40 percent fewer calories than they would normally. Resveratrol may mimic caloric restriction.

Dr. Sinclair said he doesn't believe humans will ever live hundreds of years, but with something like resveratrol, we could add on another decade. He said, "The best way to put it is that this is one of the best shots to have a big impact on medicine."

## **Wine Helps Kill Bad Oral Bacteria, Study Finds**

18th July 2007

Wine Spectator

Recent research at the University of Pavia in Italy has found that both white wine and red wine may help prevent the proliferation of streptococci, a type of bacteria associated with cavities, tooth decay and sore throats.

Oral strains of streptococci are responsible for the formation of dental plaque which, if left unchecked, can lead to cavities and periodontal disease. In the throat, these strains cause the burning, red inflammation known as strep throat. "Our findings seem to indicate that wine can act as an effective antimicrobial agent," in the mouth and throat, said the study's authors, led by Maria Daglia, a researcher at the University's Department of Pharmaceutical Chemistry. The study was published in the July 11 issue of the Journal of Agricultural and Food Chemistry.

According to the study, apples, tea and mushrooms have been shown in other tests to help kill streptococci. However, "wine also possesses antimicrobial properties" in general, the authors wrote. A prior study found wine to be a potent killer of bacterial strains responsible for some forms of diarrhea.

In order to test if wine could help control streptococci, the scientists isolated eight strains of the bacteria and exposed them to wines purchased from a nearby supermarket. For the red wine, they used a 2003 Valpolicella Classico DOC Superiore and for the white they used a 2003 Pinot Nero DOC. The researchers removed alcohol from the wines--as alcohol is a common ingredient in name-brand oral cleansers--in order to test if other compounds found in wine may exhibit antibacterial behavior.

After preparing the eight strains, the scientists incubated the bacteria to normal body temperature, 98.6 degrees F, then added the wine. The control group, the bacteria that was warmed and left untouched, quickly began to reproduce and flourish. By the end of five hours, the bacterial colonies had grown by an average of 15 percent. (Strep throat symptoms normally appear two to four days after exposure.)

The samples that were treated with 5 ml of wine, on the other hand, not only didn't reproduce, but also began to die. After five hours, the numbers were reduced by up to half. In addition, the red wine proved to be a slightly more effective streptococci killer (though not to a statistically significant degree). The experiments were performed three times, with similar results.

To determine what compounds in wine may be responsible for the observed action, the scientists separated the differing chemical compounds in wine from one another. When

they repeated the tests, phenolic compounds, such as tannins and anthocyanidins showed no effect on bacterial growth. However, the organic acids in wine--some found in grapes, some a product of malolactic fermentation--began to kill the bacteria.

As for how much wine people should consume to help prevent streptococci-related ailments, Gabriella Gazzani, the study's coauthor, said that even small amounts of wine may prove to be an effective antimicrobial agent in the mouths of humans. However, further studies were necessary to determine the direct effects of wine on the mouth and throat.

The positive results add to the findings of a previous study found that a red-wine compound may help to destroy two types of bacteria associated with gum disease. In that study, researchers found that the polyphenol resveratrol reduced one type of bacteria by 40 percent and the other by 60 percent, when tested on immune cells from mice. The ability of resveratrol to destroy streptococci was not tested in the Italian study.

## **Study Shows Improved Health With Regular Use of Resveratrol - Compound Found In Grapes**

20th July 2007

Carolina Newswire

RALEIGH, N.C. — A natural compound found in foods such as grapes and nuts has proven beneficial to the overall health of overweight, aged mice, providing significant implications for the health and survival of mammals.

A study released by the National Institute on Aging and the National Institutes of Health has found that overweight mice whose high calorie diet was supplemented by the compound Resveratrol had better health and survival than aged overweight mice who did not receive the compound. The online study published in the November 1 issue of *Nature*, indicates that heavy doses of Resveratrol lowers the rate of diabetes, liver problems and other fat-related health issues in obese mice.

Researchers believe that Resveratrol is one of the primary ingredients responsible for the cholesterol lowering effects of red wine and is also thought to contribute to the improved cardiovascular effects associated with the moderate consumption of red wine and grape products. Resveratrol also demonstrates anti-infective, anti-oxidant, and anti-inflammatory properties that help it block reactions associated with the cancer process.

Resveratrol, a small molecule produced when certain plants are under stress, is found in the skin of grapes and in other plants. Campbell University has measured the concentrations of Resveratrol in Muscadine grapes to be five to seven times higher than any other product on the market today.

The muscadine grape is native to the southeastern United States and is well adapted to the warm, humid conditions of this region. It is harvested as single berries instead of in bunches and has smaller leaves and fruit with thicker skins than the bunch-type grapes.

In a study reported January 1997 in Science, researchers at the University of Illinois at Chicago purified Resveratrol from grape sources and showed it to have anti-carcinogenic activity, meaning that it inhibits tumor promotion. Muscadines also contain ellagic acid, a natural organic compound thought to inhibit the start of cancer caused by certain chemicals.

Given the significant amounts of Resveratrol found in the muscadine grape, economists are predicting that the muscadine will not only be an alternative crop for growers in the Southeast, but a new health food as well.

### **Is resveratrol, the reputed antiaging ingredient found in red wine, on the market yet?**

30th July 2007

Boston.com

Yes. There are a number of resveratrol products being sold as dietary supplements, but as with many such supplements, these products have not been rigorously tested, or approved by the US Food and Drug Administration as safe and effective.

High doses of resveratrol have been shown by researchers at Harvard Medical School and elsewhere to prevent mice fed a high-calorie diet from developing signs of incipient diabetes and to prolong life in yeast, worms, and mice. Scientists suspect, but have not proved, that resveratrol activates a gene called SIRT1 that may forestall the effects of aging. Red wine is famous for containing resveratrol, but the amounts are so tiny that it would take hundreds of bottles a day to get enough resveratrol to see the same benefits in humans that have been shown in mice, said molecular biologist David Sinclair, the Harvard scientist who studies resveratrol and was the cofounder of Sirtris Pharmaceuticals in Cambridge.

Sirtris researchers are trying to develop a drug that is a more efficient version of resveratrol to combat Type 2 diabetes and other illnesses, but it will take at least five years to bring it to market -- if it works. Other companies also have resveratrol-like products in the pipeline.

Meanwhile, Bill Sardi, president of Resveratrol Partners LLC, which makes Longevinex, a resveratrol supplement, said his company is working on human safety studies.

While he said he believes resveratrol supplements are safe, he suggested that people not take them along with medications because they may result in higher levels of certain medications in the bloodstream.

### **How Fat Is Produced And Stored: Sirtuin Protein Instrumental In Fat Production And Metabolism**

16th August 2007

ScienceDaily

Diabetes Center-led study has identified a protein found in fat cells that may play a major role in how fat is produced and stored, offering a new target for treatments to prevent obesity and reduce the risk for type 2 diabetes.

The study examined the role of a protein called Sirt2, a member of the sirtuin family of seven cellular proteins. These proteins have recently been shown to be important in the control of aging and metabolism. Previous studies have focused on one member of this family, Sirt1, which is activated by high doses of resveratrol, a substance found in red grapes, which can prevent diabetes from developing and also prolong life. This finding generated tremendous attention, leading biotechnology and pharmaceutical companies to begin developing drugs and supplements to harness this effect. Joslin researchers have focused on other sirtuin proteins to find out what role they might play in fat and glucose metabolism and fat development.

This led to the discovery that Sirt2 is the most abundant of the sirtuins in fat cells, expressed in quantities five to ten times higher than the other sirtuin proteins. “We wanted to find out what would happen to the behavior of fat cells—in terms of metabolism or growth—if we changed the levels of Sirt2,” said lead investigator C. Ronald Kahn, M.D., an internationally recognized researcher who is head of the Joslin section on Obesity and Hormone Action and the Mary K. Iacocca Professor of Medicine at Harvard Medical School.

When a person gains weight, cells in connective tissue known as pre-adipocytes differentiate and fill with fat and form adipocytes, which are able to store fat as a potential energy source when food is not available. However, too much fat storage leads to obesity and to many obesity-related diseases, including type 2 diabetes.

Using genetically altered cells from mice, the Joslin researchers were able to manipulate Sirt2 levels in adipocytes. They found that increasing Sirt2 levels in the cell would block the cell’s ability to undergo differentiation and store fat, while reducing Sirt2 would promote adipogenesis, or fat production. They then went on to pinpoint exactly how Sirt2 produced these effects by interacting with and modifying one of the key transcription factors, or molecular switches, regulating fat differentiation and function, a molecule called FoxO1. FoxO1 is also an important target of insulin action in fat where it helps control the aging process.

Thus, when Sirt2 levels in pre-adipocytes are low, more fat cells develop, while when Sirt2 levels are high, this process is blocked. “So, to reduce the amount of fat in the body and help people stay thin, we need to find an activator of Sirt2,” said Kahn.

The discovery of Sirt2's role in fat production gives researchers a new avenue to pursue in preventing and treating obesity. “Since most of the diabetes epidemic is driven by obesity, Sirt2 may also play a role in preventing type 2 diabetes from developing and in treating people who have already developed the disease,” said Kahn.

This is an important goal since more than 60 percent of Americans are now overweight or obese, and obesity is a major factor driving the current epidemic of type 2 diabetes, which now affects more than 20 million people in the U.S. alone.

The next step in the research process will be to create an animal model to validate the results. Once they are confirmed, biotechnology companies can try to develop drugs that would activate Sirt2 in fat cells and provide another tool for combating overweight, obesity and diabetes.

## **Red Wine Compound Shown To Prevent Prostate Cancer**

1st september 2007

ScienceDaily

University of Alabama at Birmingham (UAB) have found that nutrients in red wine may help reduce the risk of developing prostate cancer.

The study involved male mice that were fed a plant compound found in red wine called resveratrol, which has shown anti-oxidant and anti-cancer properties. Other sources of resveratrol in the diet include grapes, raspberries, peanuts and blueberries.

In the study resveratrol-fed mice showed an 87 percent reduction in their risk of developing prostate tumors that contained the worst kind of cancer-staging diagnosis. The mice that proved to have the highest cancer-protection effect earned it after seven months of consuming resveratrol in a powdered formula mixed with their food.

Other mice in the study, those fed resveratrol but still developed a less-serious form of prostate cancer, were 48 percent more likely to have their tumor growth halted or slowed when compared to mice who did not consume the compound, the UAB research team said.

This study adds to a growing body of evidence that resveratrol consumption through red wine has powerful chemoprevention properties, in addition to its apparent heart-health benefits, said lead study author Coral Lamartiniere, Ph.D., of UAB's Department of Pharmacology and Toxicology.

An earlier UAB study published May 2006 in the same journal found resveratrol-fed female mice had considerable reduction in their risk of breast cancer.

Lamartiniere said his research team has been pleasantly surprised at the chemoprevention power of wine and berry polyphenols like resveratrol in animal models.

“A cancer prevention researcher lives for these days when they can make that kind of finding,” Lamartiniere said. “I drink a glass a day every evening because I’m concerned about prostate cancer. It runs in my family.”

Lamartiniere and other researchers say work is already underway to test resveratrol consumption in humans to see what concentrations are needed to convey cancer-prevention benefits.

The amounts used in the UAB mice studies were the equivalent of one person consuming one bottle of red wine per day, which is not advisable. Since drinking alcohol in excessive amounts can have harmful health effects, doctors generally recommend moderate red wine consumption, which is an average of two drinks a day for men and one drink a day for women.

## **Unique Grape Skin Extract Inhibits Prostate Cancer Cell Growth in the Laboratory**

1st sep 2007

NIH News

Laboratory experiments show that an extract of the skin of muscadine grapes can inhibit growth of prostate cancer cells in the laboratory. Investigators from the National Cancer Institute (NCI), part of the National Institutes of Health, and their research partners also show that muscadine grape skin extract (MSKE) does not contain significant amounts of resveratrol, another grape skin component that has been widely studied and shown to be of potential benefit in preventing prostate cancer growth. The results appear in the September 1, 2007, issue of *Cancer Research*.

Using a series of human prostate cancer cells, representing different stages of prostate cancer progression, the researchers showed that MSKE significantly inhibits the growth of cancerous, but not normal, prostate cells, primarily by inducing a process called apoptosis, or programmed cell death. Programmed cell death is one of the mechanisms the body uses to rid itself of cells with unrepaired genetic damage before those cells can duplicate themselves. In contrast, resveratrol seems to act by blocking the cell cycle, a sequence of steps that a cell passes through when it grows and divides into two identical cells. Both mechanisms are used by the body to prevent the development of cancer.

According to Jeffrey E. Green, M.D., chief of the Transgenic Oncogenesis and Genomics Section in NCI's Center for Cancer Research (CCR), "These results show that MSKE may have potent antitumor activities in the lab that differ from the effects of resveratrol. Further studies of MSKE will be necessary to determine if this extract has potential as a chemopreventive or therapeutic agent."

The fact that all of the cells studied, which cover the different stages of prostate cancer tumor progression, responded to MSKE suggests that the active compounds in this extract may inhibit tumor development at very early stages.

The muscadine grape (*Vitis rotundifolia*) is distinct from the more common red grapes used to produce red wines, a major source of resveratrol. The chemical constituents of muscadine grapes differ from most other grape varieties, as they are richer in chemicals called anthocyanins. Anthocyanins, which produce the red and purple colors of the

grapes, have strong antioxidant activity and have shown several antitumor effects, including inhibition of DNA synthesis in breast cancer cells, of blood vessel growth in some tumors, and of enzymes involved in tumor spread. Muscadine grapes can be found growing wild from Delaware to the Gulf of Mexico and westward from Missouri to Texas.

While previous studies suggested that anthocyanins might suppress the cancer process, no rigorous study of the mechanisms underlying these effects has yet been done. Resveratrol, by contrast, has been widely examined. Although earlier studies showed that it can induce programmed cell death in prostate cancer cells, resveratrol did not significantly induce cell death in the prostate cell model system used for this muscadine study. The results of this study suggest that resveratrol may activate different antitumor mechanisms than MSKE.

Even though MSKE had significant inhibitory effects on the prostate cancer cells studied, it did not alter the growth rate of the normal human prostate cells in the lab, which served as controls. Ongoing studies of MSKE in animals will help to determine the underlying mechanisms of MSKE's inhibitory effects in prostate cancer cells. The researchers hope that the lab effects of MSKE will be reproducible in testing on cancerous and normal prostate cells in animals. Should MSKE move on to trials in humans, Green says that since "muscadine grape products, including grape juice and grape wine, have been used in human studies without reported side effects, they may be relatively safe for use in clinical trials."

## **Red wine compound may halt cancer**

1st sept 2007

The times of India

LONDON: A compound found in red wine may help prevent cancer of the prostate, a gland in the male reproductive system, a new study says.

The compound found in red wine is called 'resveratrol' and scientists say it has antioxidant and anti-cancer properties.

The compound can also be found in grapes, raspberries, peanuts and blueberries.

In the new study, researchers led by Coral Lamartiniere of the University of Alabama at Birmingham fed mice the compound and found an 87 percent reduction in their risk of developing prostate tumours, reported science portal EurekAlert.

The mice that were given the compound mixed with their food over seven months showed the highest cancer-protection effect.

The findings were published in August in the online edition of journal 'Carcinogenesis'.

Red wine, made from red or black grapes, is known to protect from heart disease although scientists have warned that excess consumption of alcohol can have harmful health effects.

Doctors generally recommend moderate consumption of alcohol - an average of two drinks a day for men and one drink a day for women.

## **Red wine linked to anti-cancer potential**

3rd Sep 2007

BeverageDaily

Nutrient found in red wine has shown a positive result in cancer reduction, a study in mice has found.

Researchers from the University of Alabama at Birmingham, and writing in the August edition of the Journal of Carcinogenesis, examined the effect of the plant compound resveratrol when fed to male mice with the aim of preventing prostate tumours.

The study adds more weight to the health benefits of the compound. Previous studies have linked it to having 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.

Resveratrol - an antioxidant - is also found in grapes, raspberries, peanuts and blueberries, which in turn fall under the umbrella group of superfoods.

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.

In the study the mice were given the equivalent of one litre of wine a day.

In the study, resveratrol-fed mice showed an 87 per cent reduction in their risk of developing prostate tumours. The mice that experienced the highest cancer-protection effect earned it after seven months of consuming resveratrol in a powdered formula mixed with their food.

Other mice in the study, that developed a less-serious form of prostate cancer and were fed resveratrol, were 48 per cent more likely to have their tumor growth halted or slowed when compared to mice who did not consume the compound, the UAB research team said.

This study adds to a growing body of evidence that resveratrol consumption through red wine has powerful chemoprevention properties, in addition to its apparent heart-health benefits, said lead study author Coral Lamartiniere of UAB's Department of Pharmacology and Toxicology.

An earlier UAB study published May 2006 in the same journal found resveratrol-fed female mice had considerable reduction in their risk of breast cancer.

He said: "A cancer prevention researcher lives for these days when they can make that kind of finding.

"I drink a glass a day every evening because I'm concerned about prostate cancer. It runs in my family."

The team of researchers are now starting work to test resveratrol consumption in humans, specifically looking at the levels of concentrations needed to produce a similar effect as that which was found in the mice.

## **Red Wine Compound Reduces Prostate Tumor Risk, Study Finds**

5th sep 2007

Wine Spectator

Mice fed resveratrol showed an 87 percent lower risk of getting prostate tumors. A new study published online in the Journal of Carcinogenesis has reported that laboratory mice fed the chemical resveratrol, a compound found naturally in red wine, developed tumors in the prostate at a much lower rate than mice fed on a normal diet. More importantly, the scientists believe that the research holds good promise for humans since the mice directly ingested a form of the chemical.

The researchers, from the University of Alabama at Birmingham (UAB), also found that resveratrol didn't harm other systems in the mice. This lack of toxicity makes resveratrol a prime candidate for use as a cancer-preventing dietary supplement. Few studies to date have examined the effects of resveratrol when ingested by mammals, or the tests tend to use large amounts of the chemical that would be unobtainable by drinking wine.

While resveratrol has shown promise as an anti-aging, anticancer agent, the "chemoprevention of prostate cancer has not yet been reported with resveratrol in animal models," the authors of the study wrote. "Chemoprevention and the use of dietary supplements without toxicity to reduce cancer risk are extremely pertinent."

The scientists used 82 mice in their experiment. Fifty-three mice served as a control group, while the other 29 were fed 625mg of resveratrol per kilogram of body weight, per day in addition to their regular diet. According to lead author Coral Lamartiniere, a researcher at the UAB department of pharmacology and toxicology, this amount of resveratrol is equal to drinking about one bottle of red wine each day.

At five weeks of age, the scientists started the resveratrol mice on the supplements, which were mixed in powder form into the standard chow. Daily blood tests were conducted to confirm the presence of resveratrol in the mice. All 29 mice showed levels of the red wine compound, and their behavior and appetite did not change notably over the next six

months. After seven months, 23 percent of the control mice showed some form of prostate cancer, compared to only 3 percent of the resveratrol-fed mice. This is equal to an 87 percent lower risk, the researchers wrote, adding that for the resveratrol mice with prostate cancer, "the progression of prostate-tumor development was slowed down."

The scientists performed many more tests in order to determine the pathway resveratrol may take to serve as an anticancer substance. They concluded that resveratrol may work in a "direct biological effect on the prostate," indicating the possibility of a similar effect in humans.

According to the study, the American Cancer Society expects 27,050 male deaths from prostate cancer in 2007, making it second only to lung cancer. "Although we may not wipe out prostate cancer, we do hope to suppress the progression of prostate cancer so men can extend their lives and quality of life," the study said.

Lamartiniere added that men shouldn't drink a bottle of wine a day, as consumption at that level is hazardous, and that his team is planning to do more studies using lower doses of resveratrol, and even with other polyphenols found naturally in red wine. However, Lamartiniere, who has a family history of prostate cancer, has already taken the study results to heart. "I drink a glass of Cabernet Sauvignon every night and take resveratrol supplements every day," he said.

## **How red wine 'magic ingredient' aims to beat diseases of ageing**

10th Sept 2007

TimesOnline

British patients suffering from a rare disease will be among the first to try a new drug based on the "magic ingredient" in red wine.

A small trial in Newcastle upon Tyne will test resveratrol, a chemical that could lead to a whole family of new drugs with powerful effects against the diseases of ageing. The proprietary version of resveratrol, SRT501, is also under trial in India for use against diabetes and newer versions hundreds of times more powerful are in the pipeline.

The new drugs come from research showing that all species live longer on a calorie-restricted diet. So long as there is adequate nutrition, cutting calories by 40 per cent prolongs lifespan by 50 per cent or more – in yeast, mice, rats and every other species so far tested.

In 1999 David Sinclair, at Harvard, showed that a single gene, SIRT1, controlled the process. Subsequent work showed that resveratrol activates this gene – perhaps explaining why red wine seems to prolong healthy life. Dr Sinclair is now a director of Sirtris Pharmaceuticals, based in Cambridge, Massachusetts, which was set up to exploit the research. In 2006, working with Joseph Baur and others, he showed that in mice the ill-effects of a high-calorie diet could be reversed by resveratrol.

But this did not happen in mice lacking the SIRT1 gene, proving that this gene is the key to the process.

Sirtris developed SRT501 as a more potent version of resveratrol. The animal evidence suggests strongly that it – and its even more powerful successors – should work against the developed world's fastest-growing degenerative disease, diabetes.

In mice and rats, SRT501 reduces weight gain and glucose levels in animals fed on a calorie-rich, Western-style diet. When used with existing diabetes drugs such as Metformin, it amplifies the benefits. And, most strikingly, it increases the ability of the mice to run, turning them into athletes who can easily outlast their litter-mates on a treadmill.

SRT501 achieves this by increasing the production of mitochondria, the tiny power-houses within the cells, and amplifying muscle power. That is why the Newcastle trial has been set up. The 30 patients who will take part suffer from a progressive and fatal genetic disorder called Melas syndrome, affecting their mitochondria. Melas stands for mitochondrial encephalopathy, lactic acidosis, and stroke.

Symptoms vary greatly from patient to patient. "Some are benign, others devastating," says Patrick Chinnery, Professor of Neurogenetics at the University of Newcastle upon Tyne and a specialist in mitochondrial diseases, who is running the trial.

Patients with Melas generally start by developing a form of diabetes. But the effects can later spread throughout their bodies.

"They can't convert food into energy efficiently," Professor Chinnery said. "It tends to affect the brain, the heart, and the limb muscles."

The 30 patients in the trial will be divided into two groups, with half given SRT501 and half a placebo. The aim is to test safety and to investigate, using magnetic resonance imaging and muscle biopsies, whether the mitochondria are multiplied. Patients' muscle strength and endurance will also be measured. "The animal evidence is quite compelling," Professor Chinnery says. "I'm convinced it's worth a go."

## **Red wine's curative properties against heart disease set to be tested**

10th sept 2007

SAWFS News

British researchers will test Resveratrol, a drug based on the 'magic ingredient' in red wine that offers hope to cure the diseases of ageing.

A version of resveratrol, SRT501, is also being tested in India for diabetes and several versions of the drug are also in the pipeline.

The new drugs are a result of and earlier research that found that longevity can be increased through a calorie-restricted diet

The study found that reducing calories by 40 per cent prolongs lifespan by 50 per cent or more - in yeast, mice, rats and every other species so far tested.

In 1999 David Sinclair, at Harvard, showed that a single gene, SIRT1, controlled ageing process.

More work revealed that resveratrol activates the gene, explaining why red wine is good for health.

Dr Sinclair, who is now a director of Sirtris Pharmaceuticals, based in Cambridge, Massachusetts, with Joseph Baur and others, showed that in mice the adverse effects of a high-calorie diet could be reversed by resveratrol.

Sitris has developed a more powerful version of resveratrol, SRT501, that can be effective for treating degenerative disease, diabetes

In mice and rats, SRT501 cuts weight gain in animals fed on calorie-rich diet. When combined with Met-formin, a diabetes drug, it makes mice run faster than their other mates.

This happens by increasing the production of mitochondria, which are tiny powerhouses that increase muscle power.

In the Newcastle trial has been set up. 30 patients with a progressive and fatal genetic disorder called Melas (mitochondrial encephalopathy, lactic acidosis, and stroke) syndrome, will participate.

"Symptoms vary greatly from patient to patient. Some are benign, others devastating," Times Online quoted Patrick Chinnery, Professor of Neurogenetics at the University of Newcastle upon Tyne and a specialist in mitochondrial diseases, who is running the trial, as saying

## **A compound found in red wine may reduce prostate cancer risk**

18th sept 2007

TopCancerNews

A compound found in red wine may reduce prostate cancer risk according to researchers at the University of Alabama at Birmingham.

The study showed that mice who were fed a compound called resveratrol, which is found in red wine, had an 87 percent reduction in their risk of developing aggressive prostate tumors. The mice who gained the highest cancer-protection effect consumed resveratrol in a powdered formula mixed with their food for seven months.

Resveratrol can also be found in grapes, raspberries, peanuts and blueberries, in addition to red wine. An earlier study found that mice fed resveratrol had a reduction in their risk of breast cancer.

Lead author Coral Lamartiniere says that, "A cancer prevention researcher lives for these days when they can make that kind of finding. I drink a glass a day every evening because I'm concerned about prostate cancer. It runs in my family."

To ingest the same amount of resveratrol that the mice did, solely from red wine, an average person would have to drink a bottle a day.

## **Discovered: the Fountain of Youth**

22nd Sept 2007

The Earth Times

For the better part of a century scientists have been aware that one way of extending the lives of animals was by reducing the calories they consumed by 30 to 40%. They, however, did not know the 'why' for it.

Now, a recent study claims to have found the answer and even more- the means by which this prevents cell aging and aged related diseases.

The bio pharmaceutical company Sirtris that concentrates on producing small molecule drugs that can treat diseases associated with aging, along with researchers at Harvard Medical School, Boston, National Institute on Aging, Institutes of Health, Baltimore, Weill Medical College of Cornell University, New York, and Boston's Beth Israel Deaconess Medical Center, has reported in the journal, Cell, on Thursday, 21st September, that they have discovered a new way to delay aging.

The scientists revealed that stimulating SIRT3 and SIRT4, which are members of the sirtuin family of enzymes, guards against damage of cells. This has established further that sirtuins can be important targets in the treatment of aging associated diseases.

In their experiments they found that when cells are put under stress, such as the case of calories being restricted, the two enzymes take action to protect cells from the diseases of aging.

These enzymes, of which there are seven, have been recently found to be able to encourage the body's natural barricading against disease. Their popularity in the manufacture of drugs can be put down to the fact that they have a specialized function in mitochondrial activity proving beneficial against the diseases of aging.

Mitochondria are the cell chargers, providing energy for the different functions performed by the cells. Earlier observations have implied that they are actively engaged in keeping cells healthy and alive, which is essential in prolonging an organism's life.

It is when the mitochondria weaken and do not function well that the cells start to weaken and grow more susceptible to DNA stress, and eventually die.

With the enzymes coded by SIRT3 and SIRT4 genes the health of the mitochondria are restored thus reinstating cell energy and delaying aging.

Declaring that they didn't expect that the most important "part of this pathway" was in the mitochondria, study co-author and assistant professor of pathology at Harvard Medical School, David Sinclair said, "We think that we've possibly found regulators of aging."

Christoph Westphal, M.D., Ph.D., Chief Executive Officer of Sirtris Pharmaceuticals remarked, "These exciting new data further validate sirtuins as attractive targets for drug development to treat diseases of aging. This study identifies SIRT3 and SIRT4 as additional targets, expanding beyond previous work which focused on targeting SIRT1. These findings broaden the potential of Sirtris' drug discovery platform and intellectual property focused on sirtuin modulators to treat a number of diseases of aging such as metabolic, mitochondrial, inflammatory and neurological disorders, and cancer."

He also announced that the company was currently in Phase 1b and Phase 2a clinical trials with their first sirtuin modulator, SRT501. This is a formulation of resveratrol used in activating the enzyme, SIRT1.

He said that SRT501 represented their first clinical stage drug candidate and that they were also developing a portfolio for new SIRT1 activator drug candidates. These are compounds markedly more effective than and structurally different from resveratrol.

## **Support A Healthy Cardiovascular System With Resveratrol**

29th sept 2007

PR-GB.com

Chemically, Resveratrol is a polyphenol that includes the flavanoids and proanthocyanadins, both very powerful antioxidants. These are very useful for the destruction of free radicals that threaten your health and well-being in this age of excessive pollution and vehicle emissions, and also excessive exposure to the harmful factors of sunlight through the erosion of the ozone layer that acts as a filter against these harmful free radical-inducing rays.

Biochemically it is a phytoalexin, a chemical used by a plant to protect against and destroy invaders. Each phytoalexin is specific to a particular invader, whether it is an insect, a bacterium or a fungus. They can take the form of terpenes, alkaloids or any other chemical that disrupt the cell walls of or otherwise destroy the enemy to the plant concerned.

Resveratrol is particularly well known for existing on the skins of red grapes, but can also be produced synthetically and marketed as a nutritional supplement. The so-called 'French Paradox' relates to the low incidence of coronary heart disease in Southern France

in spite of the high saturated fat content of their diet. At least part of this is claimed to be due to the Resveratrol content of the red wine they drink, although the quantity even in a whole bottle is very small.

However, before considering the nutritional benefits of the extract, apart from red grape skins where else can resveratrol be found? Japanese knotweed is a bushy perennial plant, about 4 to 10 feet high, is a very rich source of resveratrol, and is the more important natural source of the two. Red grape skins hardly contain enough to be worthy of extracting. It is also present in minor quantities in pine nuts, peanuts and various other vines and grapes.

It has been under study for many years now for its effect on the heart and other parts of the body, and the antioxidant effect of resveratrol has been found to be unique. The effect of free radicals on the arteries is to help, along with cholesterol, to promote the thickening and hardening of the artery walls. Damage to the arteries by free radicals, and the resulting scar tissue, causes the production of even more free radicals and a vicious circle of damage and even more free radical production occurs.

The antioxidant action of resveratrol is in the enhancement of the nitric oxide content of the blood. Free radicals can reduce the levels of blood nitric oxide that in turn increases blood pressure. An increase in nitric oxide by appropriate antioxidants can help to reduce blood pressure closer to normal. Resveratrol is more effective in achieving this than any of the vitamin antioxidants, A, C or E. It does so by opening up the arteries and reducing the resistance to blood flow through them. .

It also helps to prevent blood cells from sticking together and forming clots that can lead to serious cardiovascular problems, and has been found by Canadian studies to be effective against a much wider range of chemicals that promote blood clotting than any other anti-clotting components of wine. In fact it has now been established, and more or less confirmed by the medical profession, that drinking red wine significantly reduces the effects of cardiovascular disease and can even go a long way towards curing it. Napa Valley here we come!

Inflammation is a condition that is caused by the immune system of the body, the purpose of which is to protect us against foreign invaders. However, once inflammation starts, it triggers even further immune responses itself, that if not controlled can lead to extremely painful and sometimes very serious conditions, even after the major trigger for the initial immune response has been dealt with.

Inflammation is regulated by chemicals known as cytokines, the master of which is NF Kappa B that controls all other cytokines. NF Kapa B also controls the activity of cyclooxygenase-2 (COX-2) essential for that part of the immune system that causes inflammation.

COX-2 is an enzyme that increases the production of Postaglandin E-2 (PGE-2) that is an essential trigger for T-cells that attack perceived foreign cells. If PGE-2 is suppressed,

then the T-cells will not be activated. This is an essential part of reducing unwanted inflammation. However, it can be dangerous to suppress molecules below NF Kappa B such as COX-2 or PGE-2. VIOXX is a prime example of the type of heart problems that can occur if you try that type of inhibition, and Celebrex is another.

The beauty of resveratrol is that, although advertised and claimed to control COX-2 and Prostaglandin E-2, it does so by suppressing the action of NF Kapa B, the 'supreme controller' of the inflammatory war.

Finally, there is also some evidence that resveratrol can have an effect on aging. It is well known that powerful anti-oxidants can help to protect against the cell destruction that free radicals can cause, and so help to protect the body against the aging effect of this cell destruction. However, there is another way in which resveratrol might contribute to us all looking more youthful in future (though for many of us it is a bit too late!).

Sirtuins (silent information regulator proteins) are enzymes that are known to promote the survival of cells through adverse conditions, such as SIRT 1 that protects against premature aging by suppressing the destruction of damaged cells long enough for them to be repaired. Plant polyphenols such as resveratrol are though to be able to activate sirtuins with the possibility of lengthening life by slowing natural cell destruction, and have also been shown to be able to slow aging by activating sirtuins to mimic the benefits of calorie restriction.

There is still a lot of research and work required on resveratrol, but the signs are evident that this is a possibility in the future for extending the average lifespan of human beings by a significant amount. In the case of yeast it has been demonstrated to be as much as 80%.

Translated to you or I that would mean us living to about 140 years old - if we want it!

## **Low Doses of Red Wine Chemical May Fight Diabetes**

2nd Oct 2007

US News

Chinese researchers have outlined the molecular chain of activity that makes resveratrol, a chemical found in the skin of red grapes and in red wine, a promising candidate for treatment of diabetes and other conditions.

The study focused on how resveratrol improved the sensitivity of mice to insulin, an effect that could lead to new treatments for type 2 diabetes, in which human cells lose their sensitivity to insulin.

And U.S. experts said the chemical's effect on a number of different tissues could eventually lead to such dreamed-of medications as an effective diet pill.

The study, by researchers at the Chinese Academy of Sciences in Shanghai, showed that resveratrol activates an enzyme called SIRT1. This enzyme, in turn, suppresses the

activity of a molecule called PTP1B, which ordinarily works to decrease insulin activity. SIRT1 levels were reduced in the animals' insulin-resistant cells. Increasing SIRT1 activity with resveratrol improved insulin sensitivity by acting on PTP1B.

The study is published in the October issue of Cell Metabolism.

"When you suppress PTP1B, insulin activity improves," said Young-Bum Kim, an assistant professor of medicine at Beth Israel Deaconess Medical Center in Boston, one author of an accompanying editorial in the journal.

"SIRT1 has a variety of functions in the body," Kim said. "Now we can move on to other tissues, such as the brain. It is possible that regulating the hypothalamus with SIRT1 can prevent diet-induced obesity."

That is clearly a long-term goal, said Janice M. Zabolotny, an instructor in medicine at Beth Israel Deaconess, and the other author of the editorial.

"But it can make animals want less food and lower body weight," she said. "By activating SIRT1, you could block the expression of PTP1B and get the same hopeful benefit."

But clearly, "further studies are needed by other researchers and on different tissues in animals," Zabolotny said.

One striking finding was that much lower levels of resveratrol than in previous trials were able to increase the animals' sensitivity to insulin.

"This paper is different from previous reports in that lower doses were effective," Zabolotny said. "The reason for the difference is unclear."

A statement by Qiwei Zhai, lead author of the report, recommended caution to resveratrol enthusiasts, noting that those who have been drinking red wine might "think about drinking less."

Previous studies had indicated that a human would have to drink about 120 liters of red wine in a day to get the benefit seen in animals. The new results reduce that amount to a still-substantial three liters.

"An even better option may be to find other natural foods enriched with resveratrol or foods supplemented with resveratrol," Zhai said.

## **Red Wine Compound Helps Regulate Insulin, Research Finds**

26th Oct 2007

Wine Spectator

Resveratrol, a naturally occurring compound in red wine, may help prevent the onset of type 2 diabetes, according to research conducted at the Chinese Academy of Sciences. In

the study, published in this month's issue of the journal *Cell Metabolism*, the scientists found that mice, when given resveratrol, had optimized insulin production and were better able to metabolize glucose. The study's authors believe that the findings could lead to a resveratrol-driven treatment of diabetes, which currently affects more than 170 million people worldwide.

According to the study, resveratrol has been shown to activate an enzyme in humans called Sirtuin 1 (SIRT1), which is thought to have myriad benefits. Through that pathway, in lab experiments, resveratrol has been found to boost the endurance of mice and limit weight gain. "We found SIRT1 improves insulin sensitivity, especially under insulin-resistant conditions," said Qiwei Zhai, the researcher who led the study at the Institute for Nutritional Sciences at the Chinese Academy of Sciences in Shanghai. "Furthermore, we found that resveratrol, at a very low dose compared with many previous studies, improves insulin sensitivity via SIRT1."

In order to determine if SIRT1 may be related to the onset of type 2 diabetes, the scientists separated mice into four groups of eight. One group was fed a standard diet with water, and another a high-fat diet. The third and fourth groups were fed the same as groups 1 and 2, respectively, but with low doses of resveratrol added to their diets. All the mice were already in the early stages of diabetes.

After 16 weeks, the ability of the mice to properly metabolize sugar was examined with blood tests. When resveratrol was included in the diet, the mice digested glucose favorably. For example, after 60 minutes of eating, the mice on resveratrol had healthy blood-sugar levels. But the mice on a high-fat diet, without resveratrol, had much higher blood-sugar levels.

However, the scientists warned that even though the lowest doses of resveratrol used in the experiment—2.5 milligrams per kilogram of body weight per day—were effective in regulating mouse metabolism, humans are unlikely to get a similar benefit from drinking red wine. "According to our findings, people might need to drink about 3 liters of red wine each day to get sufficient resveratrol, about 15 milligrams, for [similar] biological effects," said Zhai.

Nevertheless, other studies examining the direct ingestion of resveratrol have shown positive results. University of Alabama researchers examining the risk of prostate cancer found that mice which ate resveratrol supplements in addition to their normal diet, showed a reduced risk of prostate cancer.

## **Could Muscadine Grape Seeds Offer Cardiovascular Benefits?**

26th Oct 2007

Sciencedaily

Could some of the natural chemicals found in plants be powerful enough to improve cardiovascular health? Researchers at Wake Forest University Baptist Medical Center are

conducting the first-ever clinical study to evaluate the potential cardiovascular health effects of Nature's Pearl Muscadine Grape Seed Supplement.

The scientists are evaluating the influence of this supplement on blood vessel function in 50 participants who have cardiovascular disease or are at high risk for developing it. They'll also determine whether there are effects on cholesterol and other fats in the blood, blood sugar levels and vessel inflammation, which are all associated with increased risk of cardiovascular disease.

Nature's Pearl is prepared in a way that generates a high concentration of plant chemicals, including gallic acid, ellagic acid, oligomeric proanthocyanidins (OPCs) and resveratrol. These are known to be antioxidants, or nutrients that can prevent or slow the oxidative damage to the body. The role of oxidative stress in blood vessel disease has generated interest in dietary sources of antioxidants, including black and green tea, grape seeds, olive oil and cocoa.

Muscadine grapes have been shown to be more potent in antioxidants than any other variety of grapes, and laboratory studies have suggested that grape seeds have higher antioxidant capacity than grape skins. Studies in humans have shown improved antioxidant capacity when grape seed supplement is added to the diet, as well as improvements in blood vessel function. However, the studies did not specifically include muscadine grapes, which have extremely high levels of antioxidant and anti-inflammatory compounds when compared to other fruits.

"The goal of the current study is to determine if daily doses of the Nature's Pearl supplement, which is specially prepared to maximize its natural antioxidant and anti-inflammatory concentrations, will have a favorable effect on cardiovascular risk factors," said David Herrington, M.D., M.P.H., lead investigator and a professor of cardiology.

Study participants are patients at Wake Forest Baptist's Family Medicine and Internal Medicine practices and are between 18 years and 65 years old. For the first four weeks of the study, participants are randomly assigned to take either 1,300 mg. (two capsules) of the Nature's Pearl Muscadine Grape Seed Supplement (grape seeds) daily or a placebo (inactive capsule).

For the next four weeks, participants do not take capsules to allow the product to "wash out" of their systems. Then, the groups will switch so that those who took placebo originally will take the supplement for four weeks.

Ultrasound technology is used to determine blood vessel function or "reactivity." Blood flow in the brachial artery, the major vessel in the arm, is measured both before and after the arteries are constricted with a blood pressure cuff. In a healthy subject, the artery dilates after the constriction. Decreased reactivity is a sign of reduced artery function and is thought to be a precursor to atherosclerosis, the buildup of fatty deposits in the vessels that can lead to heart attack or stroke.

The test is used in the brachial arteries because the heart's arteries cannot be directly imaged with ultrasound. However, atherosclerosis is a disease that affects vessels throughout the body, and the test is considered a good indicator of overall vessel function.

The study will also measure any effects on total cholesterol, low-density lipoprotein or "bad" cholesterol, triglycerides, high-density lipoprotein or "good" cholesterol, blood sugar levels and markers for inflammation, such as C-reactive protein and interleukin-6.

Patients have been recruited and the results are expected to be analyzed in early 2008.

"Cardiovascular disease is a significant problem in this country so it is worthwhile to examine foods that may have medicinal benefits," said Herrington. "In this case, our goal is to determine whether the Nature's Pearl supplement, which looks promising because of its extremely high antioxidant and anti-inflammatory content, will positively affect artery health."

## **Mighty Mouse – he'll make champions of us all**

4th Nov 2007

TimesOnline

Scientists have produced a group of ultra-fit, highly sexed, long-lived mice. Does it mean we are on the brink of creating equally amazing superhumans  
Professor Richard Hanson and his team at Case Western Reserve University in Cleveland, Ohio, thought they had embarked upon an interesting but routine experiment. They had an enzyme – PEPCK-C – that had been discovered 50 years earlier at their university. It occurs in all animals and appears mainly in their livers and kidneys where it is associated with the production of glucose. But there is also some in the muscles. Wondering what it did there, Hanson and his team decided to see what happened if they massively increased the amount of PEPCK-C in the muscles of mice.

They did this by rigging the genetics of the mice to overexpress the enzyme on skeletal muscle. Every day hundreds of such experiments are going on with millions of mice subjected to all kinds of genetic interventions. Most achieve either nothing or lots of dead mice. Genetics is still a young science in which anything may be possible, but for the moment most things aren't. Hanson wasn't expecting much from his mice.

He certainly was not expecting a long-lived, superfit, relentlessly randy, hyper-active, marathon-running mighty-mouse. But that is exactly what he got. Hanson's mice – especially the females – can run six kilometres at 20 metres a minute. They keep it up for five hours or more. (For the full, faintly comic experience of this, watch them at [tinyurl.com/3xba89](http://tinyurl.com/3xba89).) They can eat up to twice as much as an ordinary mouse but weigh half as much.

Supermice can be spotted soon after birth by their bouncing – and, I imagine, to ordinary mice incredibly irritating – hyperactivity. Later on they irritate ordinary mice even more

by not ageing and, although formal experiments have not yet been conducted on this, they appear to live longer. Female supermice have given birth at almost three years old, the human equivalent of about 80.

Everything about these results is weird. Hanson's transgenic mice are minimally different from his "wild" – ie ordinary – types. But this tiny genetic change seems to affect every aspect of the organism even, judging by its hyperactivity, its mental state. Researchers (and anybody who wants to live longer or just run up Mount Everest) are queueing up to play with the Case Western colony of 500 supermice.

The big question is: will this work in humans? We have PEPCK-C in more or less the same places as mice and we are genetically similar. That's why we use them in experiments. On the face of it, we are on the brink of becoming a race of superhumans.

Of course, it's not that simple. First of all we have no idea of the side effects. Work is going on to establish the cancer rates among supermice. They are even going to have their intelligence tested – it would be no big advantage to a human to be a superfit moron (or perhaps it would). In addition, supermice are much more aggressive than their wild type cousins.

"I don't think," says Hanson dryly, "we need more aggressive humans."

What does it mean, if anything, for us? First of all, it seems to tell us something about the effects of exercise. Hanson compares his mice with Lance Armstrong, the cyclist, who has been extensively studied by the University of Texas (see [tinyurl.com/2jbfm4](http://tinyurl.com/2jbfm4) ). His freakish ability in cycle races indicates there is something fundamentally different about his metabolism, a difference perhaps shared by the supermice.

When you or I exercise, we eventually have to stop because our muscles fail us. They do so because of a build-up of lactic acid. This happens because we are burning glucose. But the supermice seem to burn only fat and thus avoid the lactic acid build-up. It also keeps them very lean. Furthermore, the supermice seem to want to exercise: they could simply choose to stop but they don't. So whatever has happened in their muscles seems to have affected their minds, as well.

They also seem to cast new light on the effects of diet. Experiments on animals since the 1930s have consistently shown that cuts of 20% or 30% of caloric intake increase lifespan, sometimes massively. It would be unethical to conduct such experiments on humans but many have been convinced that this is the way to a longer life.

Calorie restrictionists now form a world-wide club (see [www.calorierestriction.org](http://www.calorierestriction.org)). This is generally regarded by doctors in the mainstream as risky. It may cause brain damage and does seem to cause bone weakness. But there is no question that calorie restriction pushes the body into a defensive/survival mode that does affect the ageing process. However, these supermice are consuming twice the usual number of calories.

Leading British ageing researcher Aubrey de Grey, the author of *Ending Aging: The Rejuvenation Breakthroughs that could Reverse Human Aging*, thinks that something in the treatment has kicked the supermice into the same condition as a calorie restricted creature. The supermice, for example, have much higher numbers of mitochondria than their irritated cousins, exactly like animals on restricted diets. Mitochondria are, effectively, batteries; they are structures within the cell that provide its power. The behaviour of the supermice in general is similar to that of calorie restricted animals.

This suggests that we can enjoy the benefits of calorie restriction without the misery of being hungry all the time. This is, obviously, a big area of research at the moment. In particular, scientists are looking into the action of resveratrol, the substance found in red wine that seems to protect against heart disease and other ageing conditions, in the hope that we may be able to live longer while eating as much as we like. If you are persuaded and impatient, you can easily get hold of resveratrol as a food supplement.

Whether these supermice really are living longer is not yet clear. Hanson emphasises that he has not done ageing and longevity studies on the mice and his evidence is anecdotal. But it is highly suggestive. Members of his team report that they can tell the difference between an old supermouse and a wild type and the very late litters born to old female supermice do suggest that some fundamental antiageing trigger has been pulled. As usual in ageing studies, the females seem to do much better. In almost all human populations, women seem on average to live about five years longer than men.

How any of this knowledge may be applied to humans is as yet unknown. There has been a cascade of suggestive developments pouring from genetics and micro-biological labs around the world. As long as 10 years ago another form of supermouse was developed at Johns Hopkins University – they called it Mighty Mouse. This was a super-muscular creature created, again, by an intervention of skeletal muscle gene expression.

Such developments – along with announcements such as last week's World Cancer Research Fund study that seemed to blacken the name of bacon – are indications of the scope and scale of new medical science. Crucially, they raise questions about how far we can go. Life expectancies in the developed world have continued to rise. They were expected to plateau in the 1970s. The rise up to then was well understood – it was largely thanks to antibiotics, public health measures and the suppression of infant mortality.

The rise since then is less well understood. Scientists such as de Grey in Britain and Michael West in America have been advocates of the view that we are, indeed, on the verge of achieving massive extensions in life expectancy, possibly to 1,000 years and beyond. A majority of scientists are sceptical and some believe it is downright harmful to pursue such a goal when research money could be better spent elsewhere. But to a large extent this argument is losing ground simply because so many extraordinary results are emerging from the laboratories.

The supermice at Case Western are further evidence that something big is happening in biology, something that may well mean we can take control of and even transcend our biological destinies.

Hanson fiercely resists the idea that his work has any immediate application to humans. But I would be willing to bet that someone somewhere – perhaps a Tour de France cyclist – is at this moment trying to get hold of a syringe of PEPCK-C to squirt into his all too human muscles.

Why should the mice have all the fun?

## **The Key to Long Life? Kill Your Cells Often**

6th Nov 2007

Wired

In order for you to live long and prosper, your cells may need to die while they're still healthy.

In a study published in Nature Cell Biology, Medical College of Georgia researchers found that oxidative stress, such as that caused by free radicals, consumes a protein called SENP1.

Normally, SENP1 is responsible for removing another protein, dubbed SUMO1, from an enzyme that regulates cellular death. Freed from SUMO1, the enzyme -- known as SIRT1 -- becomes fully activated; but when oxidative stress gobbles up all the SENP1, SIRT1 expression drops. The whole molecular progression stalls, just as when someone removes several dominoes from a line.\*

The researchers say this disruption could explain why oxidative stress causes cancer: without SIRT1 to cull them, cells divide continuously rather than die. That suggests a possible role for SIRT1 activators in cancer treatments, and could provide insight into why high SIRT1 levels are associated with longevity in lab animals: cells die before they're old enough to go seriously wrong.

SIRT1 is also believed to be stimulated by resveratrol, a popular fountain-of-youth compound, and its expression has been linked to many other protective mechanisms, such as the production of an Alzheimer's disease-preventing protein.

It remains to be seen whether the therapeutically extended lifespans of worms and mice can be duplicated in people, but the SIRT1 evidence is piling up at an amazing rate.

## **Seeking Immortality: Eliminating Disease**

13th Nov 2007

wptv.com

**BACKGROUND:** Right now, the average life expectancy is about 67 years. That age has gone up over the years partially because of advances treating and eliminating diseases. Many scientists are experimenting with new ways to fight disease and help extend the human life expectancy.

**LONGEVITY IN A PILL?** David Sinclair, Ph.D., of Harvard Medical School, and his colleagues are developing a pill to prevent age-related diseases like cancer, Alzheimer's and heart disease, and add years to a person's life. In 2003, Dr. Sinclair discovered a molecular compound found in red wine called resveratrol extends the life span of mice by up to 24 percent and up to 59 percent in other animals like flies and fish. He has since co-founded a company called Sirtris Pharmaceuticals. Sirtris researchers are beginning to run studies on a formulation of resveratrol in people with diabetes, with the goal to lower blood glucose levels.

Dr. Sinclair says modern medicine is based on treating one disease at a time. What drugs haven't done, however, is target the natural defense mechanisms of our bodies. He explains, "The body is a pretty clever and complex organism. It's not the molecules themselves that are miraculous. It's the genes that have evolved to protect the body."

The premise behind a formulation of resveratrol is that it activates a gene called SIRT-1, which may regulate lifespan by being activated by caloric restriction. Mice live longer when they have 30 percent to 40 percent fewer calories than they would normally. Resveratrol may mimic caloric restriction.

Dr. Sinclair says he doesn't believe humans will ever live hundreds of years, but with something like resveratrol, we could add on another decade. He says, "The best way to put it is that this is one of the best shots to have a big impact on medicine."

**NANOTECHNOLOGY:** Nanotechnology is thought to be an area of research that will enable many diseases and conditions that limit the human life expectancy to be wiped out. Using magnetic power, researchers in Berlin have found a way to use tiny particles of iron to fight prostate cancer. Their clinical trial demonstrated magnetic nanoparticles can be safely administered to humans and will produce localized tumor-killing temperatures when stimulated by an oscillating magnetic field. Manfred Johannsen, M.D., from Humboldt University Hospital Cherie in Berlin, Germany, says investigators injected magnetic iron oxide nanoparticles directly into the patients' tumors. Then, they used a magnetic field to excite the nanoparticles, which produced heat and killed the tumor cells. Each treatment lasted 1 hour and was repeated weekly for six weeks. Patients reported discomfort caused by internal heating, but using tubes of cooled liquid keeps the skin cool enough to manage this side effect. The trial was too small to say this treatment is more effective than current treatments, though researchers did note eight of 10 patients experienced a decline in prostate specific antigen levels that lasted an average of 4.5 months after therapy.

## **ConsumerLab.com Finds Some "Red Wine" Supplements Deliver Less Resveratrol Than Expected**

14th Nov 2007

HealthNewsDigest.com

ConsumerLab.com reported today that its tests of supplements containing resveratrol – a compound promoted as “life-extending” -- revealed two products providing only 27% and 58% of their listed amounts of resveratrol. A third product, which boasted several hundred milligrams of a “red wine grape complex,” contained only two milligrams of resveratrol. Several other products contained their listed amounts of resveratrol, although daily doses ranged from just 1 milligram to as much as 1,000 milligrams. None of the products were contaminated with lead or cadmium, which can occur in plant-based supplements.

Resveratrol products have proliferated following reports late last year of life-extending and athletic endurance-enhancing activity in animals. Laboratory research has also shown antioxidant, anti-inflammatory, anticancer, and other effects. Human studies of its effectiveness have not been reported, but at least one researcher in the field, Dr. David Sinclair at Harvard Medical School, is noted as taking resveratrol personally at a dose of approximately 350 mg per day.

Along with widely ranging dosage suggestions on products, ConsumerLab.com found similar variation in the cost of resveratrol. To obtain 100 mg of resveratrol from any product, the cost ranged from as little as \$0.20 to as much as \$45.57 – more than a 22,000% difference. Using the lowest cost product that passed ConsumerLab.com’s testing, the daily cost for a dose of 300 to 400 mg would be \$0.60 to \$0.80 per day. To get that dose from any of the products with single digit milligram amounts of resveratrol would be impractical – requiring hundreds of pills per day and costing as much as \$159. For some products, the price difference may reflect the cost of additional ingredients.

“I am not surprised that some resveratrol supplements failed to meet their ingredient claims,” said Tod Cooperman, MD, President of ConsumerLab.com which has tested more than two thousand supplements since 1999. “When an ingredient quickly becomes popular as a supplement, we often see products rush to market that range widely in quality, dose, and price. There is still much to learn about resveratrol. At least now those who choose to use it can find out which products contain what they claim and which do not.”

The ConsumerLab.com report is available at [http://www.consumerlab.com/results/resveratrol\\_red\\_wine.asp](http://www.consumerlab.com/results/resveratrol_red_wine.asp). It includes findings for nine products selected by ConsumerLab.com as well as four that passed ConsumerLab.com's Voluntary Certification Program. Brands included are French Parad'ox (Arkopharma), Purevinol (Pure Prescriptions), Resvert (Young Again), Resvera-Gold (Douglas Laboratories), Revatrol (Renaissance Health), Transmax (Biotivia), Vinotrol (NeXtten), and Zyflamend (New Chapter), as well as products from

Country Life, Jarrow Formulas, Life Extension, Longevinex, and Swanson. The report also provides information regarding the dosage and possible side-effects.

## **Grape Powder Blocks Genes Linked To Colon Cancer**

15th Nov 2007

ScienceDaily

Low doses of freeze-dried grape powder inhibit genes linked to the development of sporadic colorectal cancer, University of California, Irvine cancer researchers found. The study suggests that a diet rich in grapes may help prevent the third most common form of cancer, one that kills more than a half a million people worldwide each year. Around 7 percent of all Americans develop colon cancer during their lifetimes.

Led by Dr. Randall Holcombe, director of clinical research at the Chao Family Comprehensive Cancer Center at UC Irvine, the study followed up on previous in vitro studies showing that resveratrol, a nutritional supplement derived from grape extract, blocks a cellular signaling pathway known as the Wnt pathway. The Wnt pathway has been linked to more than 85 percent of sporadic colon cancers, which is the most common form of colon cancer.

The UC Irvine researchers conducted their study with colon cancer patients. One group was given 20 milligrams daily of resveratrol as a pill; another drank 120 grams daily of grape powder mixed in water; and a third drank 80 grams daily of grape powder.

While the supplements did not have an impact on existing tumors, biopsied colon tissue showed that Wnt signaling in the patients taking 80 grams of grape powder was significantly reduced. Similar changes were not seen in patients taking the higher dose of grape powder or the resveratrol pills.

The researchers aren't certain why the lower dose of grape powder was more effective than the higher one. However, they believe that the active components in the grapes may have different effects at low dose than they do at high dose, which is a fairly common finding in nutritional studies.

Holcombe and his colleagues will present their study results Nov. 16 at the Society for Integrative Oncology's Fourth International Conference in San Francisco.

"This is truly exciting, because it suggests that substances in grapes can block a key intracellular signaling pathway involved in the development of colon cancer before a tumor develops," said Holcombe.

The resveratrol chemical is found naturally in grape skins, wine and also in peanuts. It is unclear why resveratrol alone was not as effective, but Holcombe believes that other grape chemicals may supplement or boost resveratrol's efficacy.

Eighty grams of grape powder equal a half glass of wine or 1 pound of grapes, which is equivalent to three dietary servings of grapes, according to the USDA. Holcombe and his colleagues are currently designing a clinical cancer prevention study to see how a daily diet of 1 pound of grapes affects Wnt signaling.

This study follows an epidemiological survey by Holcombe, Dr. Jason Zell, assistant clinical professor of medicine at UC Irvine, and Dr. Hoda Anton-Culver, chair of epidemiology and director of UC Irvine's Cancer Surveillance Program. In this study of 499 colorectal cancer patients, they found that moderate wine consumption before developing colon cancer was associated with improved survival outcomes among those patients with family history of colorectal cancer.

The researchers found that 75 percent of such patients were alive after 10 years of initial diagnosis, compared to 47 percent of such patients who did not regularly drink wine. Study results appeared in the October 2007 issue of Nutrition and Cancer.

“Our epidemiologic study suggests that wine consumption may influence survival among a subset of colorectal cancer patients, specifically those with family history of the disease,” Zell said. “These findings could reflect unique genetic and environmental interactions among familial colorectal cancer patients, but further studies are needed to test this theory. Studies such as Dr. Holcombe's with grape powder extract and resveratrol are important as they offer potential explanations for our findings.”

Holcombe said researchers have known for a long time that there is a link between diet and cancer. “These findings suggest that we should do additional research and clinical studies on grapes and other natural products that may prove effective in helping to prevent cancer,” he said.

The grape study received support from the California Table Grape Commission and the UCLA Bionutrition Unit. The authors declare no financial interest or conflicts of interest.

## **Grape Extract Helps to Avert Colorectal Cancer**

15th Nov 2007

Medindia.com

A diet rich in grapes may help prevent the onset of colorectal cancer, the third most common form of cancer that kills over half a million people worldwide each year.

A study undertaken by researchers at the University of California, Irvine, showed that Resveratrol, a nutritional supplement derived from grape extract, blocks a cellular signalling pathway known as the WNT pathway.

The WNT pathway is linked to more than 85 percent of sporadic colon cancers.

In the study, one group of participants was given 20 milligrams of Resveratrol daily in pill form. A second group of participants drank 120 grams of grape powder mixed in water every day, while a third group drank 80 grams of grape powder daily.

As the supplements did not have an impact on existing tumors, biopsied colon tissue showed that WNT signalling in the patients taking 80 grams of grape powder was significantly reduced, while similar changes were not seen in patients taking higher dose of grape powder or Resveratrol pills.

Though the researchers were not certain why the lower dose of grape powder was more effective than the higher one, they believe that active components in grapes may have different effects in low doses as opposed to higher doses.

“This is truly exciting, because it suggests that substances in grapes can block a key intracellular signalling pathway involved in the development of colon cancer before a tumor develops,” said Dr. Randall Holcombe, Director of Clinical Research at the Chao Family Comprehensive Cancer Center at UC Irvine.

The study involved the participation of 499 colorectal cancer patients. The authors found that 75 percent of the patients were alive after 10 years of initial diagnosis, compared to 47 percent of the patients who did not regularly drink wine.

“Our epidemiologic study suggests that wine consumption may influence survival among a subset of colorectal cancer patients, specifically those with family history of the disease,” said Dr. Jason Zell, assistant clinical professor of medicine at UC Irvine.

“These findings could reflect unique genetic and environmental interactions among familial colorectal cancer patients, but further studies are needed to test this theory. Studies such as Dr. Holcombe’s with grape powder extract and resveratrol are important as they offer potential explanations for our findings,” he added.

“These findings suggest that we should do additional research and clinical studies on grapes and other natural products that may prove effective in helping to prevent cancer,” said Holcombe.

The study received support from the California Table Grape Commission and the UCLA Bionutrition Unit and the results appeared in the October 2007 issue of Nutrition and Cancer.

## **Grape-soy team-up enhances health benefits, says study**

26th Nov 2007

Nutraingredients.com

Teaming-up genistein from soy and resveratrol from grapes enhances the anti-obesity effects of the individual compounds, reports new research from the University of Georgia.

The study used human 3T3-L1 cells to model the development and biochemistry of fat cells, and found that combining the compounds reduced fat cell numbers by 59 and 70 per cent more than genistein and resveratrol alone, respectively. The research is published in the Journal of Nutrition.

"These results indicate that genistein and resveratrol in combination produce enhanced effects on inhibiting adipogenesis (formation of fat cells)," wrote the authors, led by Srujana Rayalam.

"Thus, the combination of genistein and resveratrol is more potent in exerting anti-obesity effects than the individual compounds," they added.

Rayalam and co-workers exposed pre-adipocytes and mature adipocytes to 50 and 100 micromole per litre doses of genistein and resveratrol individually or in combination.

They report that both compounds reduced cell viability in both cell types in a dose-dependent manner.

In addition to enhanced inhibition of the cells by the combination of genistein and resveratrol, compared to the individual compounds, the teaming up of the compounds induced apoptosis (programmed cell death) of the fat cells by 242 per cent, compared to control. The individual compounds at their highest dose both increased apoptosis by only 46 per cent.

The researchers also report that, at a dose of 25 micromoles per litre, the individual compounds reduced the accumulation of lipids by 30 and 20 per cent, respectively. In combination at the same respective doses, lipid accumulation was decreased by 77.9 per cent, they said.

A mechanistic study was performed by Rayalam and co-workers to explain the observations. They report that the combination of genistein and resveratrol produced a down-regulation of specific proteins associated with the development of fat cells, most notably the adipocyte-specific protein PPAR. PPAR-gamma is a hormone receptor which reportedly plays a key role in the control of expression and differentiation of adipocyte genes.

No such effects were observed for the individual compounds.

Previous studies have linked resveratrol to having 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.

Resveratrol - an antioxidant - is also found in raspberries, peanuts and blueberries, which in turn fall under the umbrella group of superfoods.

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.

## **New Diabetes Drug To Be Tested, UK**

6th Dec 2007

Medical News Today

A new drug that could combat diabetes and extend the human lifespan is being tested next year.

The drug from Sirtris Pharmaceuticals is based on two chemicals that mimic resveratrol, a compound found in the skin of red grapes and used as a health supplement.

Researchers say it has been shown to reverse the symptoms of diabetes in mice as well as reducing the impact of a high-fat diet.

They believe the pill could also help prevent diseases including cancer, heart disease and Alzheimer's.

Early days

"Although this is interesting research we have to approach it with caution," said Sara Spiers, Care Manager at Diabetes UK.

"It is very early days yet and more studies need to be carried out before we can see if the same results are found in humans."

## **For your pleasure, and for your health**

8th Dec 2007

The Aspen Times

It is what the French say in offering a toast when friends are gathered, a fine bottle of wine is opened and glasses are filled. Translated literally it means "To your health," and the sentiment is clear, a wish given to you for a long and healthy life.

But does drinking wine contribute to a long and healthy life? Perhaps you don't feel that way the morning after a night of indulging, when that foggy, leaden heaviness envelops both head and soul. But there is evidence on the medical front that drinking can, at least statistically, make you a healthier person.

The emphasis, of course, is on moderation. Studies show that drinking wine, particularly red wine, provides positive health benefits, but they also stress (often in bold capitalization) that the key to getting those benefits is moderation. Simply put, less may be more.

In 1991, the newsmagazine show "60 Minutes" aired a segment on the so-called "French Paradox." A French researcher named Serge Renaud completed a study that showed the French, despite a diet much higher in saturated fats than their American counterparts, had far fewer heart attacks. He deduced that the most likely reason for this disparity was that the French drank red wine daily. While the wine industry applauded what they perceived to be manna from heaven and wine consumption in the U.S. increased dramatically, the biggest outcome was that other researchers worldwide began to study the effect of wine consumption on human health.

The most universally accepted benefit found by most researchers is that moderate daily consumption of alcohol can be a factor in improving cardiovascular health. Studies have

repeatedly shown that people who partake of one to two drinks daily (a drink is generally defined as 5 ounces) will see lowered levels of LDL cholesterol and improved levels of HDL cholesterol — the bad and good cholesterol respectively. It should be noted that these benefits accrue from any alcohol consumption, not just wine, something the wine industry would prefer to keep out of the conversation.

But wine also has other attributes that make it unique from, say, rum or whisky. The skin of the grapes, particularly the dark grapes used in making red wine, contains a number of antioxidants such as flavonoids and resveratrol. Resveratrol is also thought to increase HDL levels, while flavonoids can prevent clotting in the blood. Of course the grape-juice industry points out that their product is made from grapes as well, and drinking straight grape juice may offer even greater health benefits than red wine.

If you need validation from the medical community that a glass or two a day is the right thing to do, there is enough evidence out there to suggest that you're probably going to be headed in the right direction.

So again, does drinking wine contribute to a longer, healthier life? Well, not if you're hit by a car, struck down by an avalanche, or bit by a black mamba. But the pleasure that comes from being with friends and toasting to one another's health is just one example of a life well-lived.

A bottle of wine can take you places, both literally and figuratively. It can please all five of the senses and that, in and of itself, makes it a pleasant part of life. Drinking wine gives us a direct connection to the earth from which it comes. Wine is grown, made and packaged for the sole purpose of bringing pleasure to those who consume it.

I contend that for those reasons alone, a life with wine will be healthier. Any other benefits that come from its consumption are merely, as they say in New Orleans, *lagniappe*, a little something extra.

So as the holiday season approaches, drink to your health. In moderation, of course.