

# Effects of resveratrol on cerebral blood flow variables and cognitive performance in humans: a double-blind, placebo-controlled, crossover investigation<sup>1,2,3</sup>

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## ABSTRACT

**Background:** The many putative beneficial effects of the polyphenol resveratrol include an ability to bolster endogenous antioxidant defenses, modulate nitric oxide synthesis, and promote vasodilation, which thereby improves blood flow. Resveratrol may therefore modulate aspects of brain function in humans.

**Objective:** The current study assessed the effects of oral resveratrol on cognitive performance and localized cerebral blood flow variables in healthy human adults.

**Design:** In this randomized, double-blind, placebo-controlled, crossover study, 22 healthy adults received placebo and 2 doses (250 and 500 mg) of *trans*-resveratrol in counterbalanced order on separate days. After a 45-min resting absorption period, the participants performed a selection of cognitive tasks that activate the frontal cortex for an additional 36 min. Cerebral blood flow and hemodynamics, as indexed by concentration changes in oxygenated and deoxygenated hemoglobin, were assessed in the frontal cortex throughout the posttreatment period with the use of near-infrared spectroscopy. The presence of resveratrol and its conjugates in plasma was confirmed by HPLC after the same doses in a separate cohort (n=9).

**The Trans-resveratrol used in this trial was Biotivia's Bioforte supplement purchased on the open market.**

**Results:** Resveratrol administration resulted in dose-dependent increases in cerebral blood flow during task performance, as indexed by total concentrations of hemoglobin. There was also an increase in deoxyhemoglobin after both doses of resveratrol, which suggested enhanced oxygen extraction, that became apparent toward the end of the 45-min absorption phase and was sustained throughout task performance. Cognitive function was not affected. Resveratrol metabolites were present in plasma throughout the cognitive task period.

**Conclusion:** These results showed that single doses of orally administered resveratrol can modulate cerebral blood flow variables.