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Grape powder may improve blood pressure, vascular health: Human study

By Stephen Daniells, 24-Jul-2012

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Daily supplements of a freeze-dried grape polyphenol powder may reduce systolic blood pressure and improve the health of blood vessels, says a new study.

One month of supplementation with the polyphenol-rich powder was associated with a reduction in levels of inflammatory biomarkers that are involved in damage to cells called soluble adhesion molecules, particularly soluble intercellular adhesion molecule-1 (sICAM-1). It is generally accepted that low circulating level of sICAM-1 is good.



"This study, to the best of our knowledge, is the first to evaluate the effects of a grape preparation of standardized polyphenol content on [metabolic syndrome] parameters and on vascular endothelial function in free-living men aged 30 to 70 years," wrote researchers from the University of Connecticut and the University of Antioquia in the *Journal of Nutrition*.

Metabolic syndrome (MetS) is a condition characterized by central obesity, hypertension, and disturbed glucose and insulin metabolism. The syndrome has been linked to increased risks of both type-2 diabetes and cardiovascular disease (CVD).

Fifteen percent of adult Europeans are estimated to be affected by MetS, while the US statistic is estimated to be a whopping 32%. Obesity is established to be the main risk factor for MetS.

Study details

For the new study, the researchers recruited 24 men with Met S and randomly assigned them to receive freeze-dried grape polyphenol powder or a placebo for one month. A three week washout period followed, and then the participants crossed over to the other intervention.

Results of the double-blind, crossover study indicated that systolic blood pressure decreased, with the average resting systolic blood pressure of 122.6 mmHg in the grape extract group, compared with 128 mmHg in the placebo group.

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In addition, sICAM-1 concentrations were lower in the grape extract group, compared to placebo.

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An increase of about 1.7% was recorded for flow-mediated dilation (FMD) was also reported in the grape group, compared with placebo. A recent study in the *British Journal of Nutrition* indicated that decreased FMD is reported to be a predictor of future adverse cardiovascular events, with every 1% decrease in FMD associated with a 12% increase in risk.

Although the researchers did not report any differences between groups for levels of the vasodilator nitric oxide species (NOx), the changes in systolic blood pressure correlated negatively with changes in NOx concentrations, indicating the vasodilating properties of nitric oxide (NO), they said.

“The bioavailability of polyphenols differs greatly depending on their chemical structure and food matrix, among other factors,” wrote the researchers. *“It has been indicated that some cells, such as endothelial cells, may readily incorporate polyphenols by specific mechanisms. Thus, the plasma concentration of polyphenols may not have been sufficient to affect lipid values. However, we did not measure polyphenol metabolites in the plasma of the participants to provide evidence of absorption or bioavailability.”*

Source: *Journal of Nutrition*

Published online ahead of print, doi: 10.3945/jn.112.162743

“Grape Polyphenols Reduce Blood Pressure and Increase Flow-Mediated Vasodilation in Men with Metabolic Syndrome”

Authors: J. Barona, J.C. Aristizabal, C.N. Blesso, J.S. Volek, M.L. Fernandez

Keywords: grape, polyphenols, circulation

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