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Plant compound resveratrol shown to suppresses inflammation, free radicals in humans

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Resveratrol, a popular plant extract shown to prolong life in yeast and lower animals due to its anti-inflammatory and antioxidant properties, appears also to suppress inflammation in humans, based on results from the first prospective human trial of the extract conducted by University at Buffalo endocrinologists.

Results of the study appear as a rapid electronic publication on the *Journal of Clinical Endocrinology & Metabolism* website and will be published in an upcoming print issue of the journal.

The paper also has been selected for inclusion in Translational Research in Endocrinology & Metabolism, a new online anthology that highlights the latest clinical applications of cutting-edge research from the journals of the Endocrine Society.

Resveratrol is a compound produced naturally by several plants when under attack by pathogens such as bacteria or fungi, and is found in the skin of red grapes and red wine. It also is produced by chemical synthesis derived primarily from Japanese knotweed and is sold as a nutritional supplement.

Husam Ghanim, PhD, UB research assistant professor of medicine and first author on the study, notes that resveratrol has been shown to prolong life and to reduce the rate of aging in yeast, roundworms and

fruit flies, actions thought to be affected by increased expression of a particular gene associated with longevity.

The compound also is thought to play a role in insulin resistance as well, a condition related to oxidative stress, which has a significant detrimental effect on overall health.

"Since there are no data demonstrating the effect of resveratrol on oxidative and inflammatory stress in humans," says Paresh Dandona, MD, PhD, UB distinguished professor of medicine and senior author on the study, "we decided to determine if the compound reduces the level of oxidative and inflammatory stress in humans.

"Several of the key mediators of insulin resistance also are pro-inflammatory, so we investigated the effect of resveratrol on their expression as well."

The study was conducted at Kaleida Health's Diabetes-Endocrinology Center of Western New York, which Dandona directs.

A nutritional supplement containing 40 milligrams of resveratrol was used as the active product. Twenty participants were randomized into two groups of 10: one group received the supplement, while the other group received an identical pill containing no active ingredient. Participants took the pill once a day for six weeks. Fasting blood samples were collected as the start of the trial and at weeks one, three and six.

Results showed that resveratrol suppressed the generation of free radicals, or reactive oxygen species, unstable molecules known to cause oxidative stress and release proinflammatory factors into the blood stream, resulting in damage to the blood vessel lining.

Blood samples from persons taking resveratrol also showed suppression

of the inflammatory protein tumor necrosis factor (TNF) and other similar compounds that increase inflammation in blood vessels and interfere with insulin action, causing insulin resistance and the risk of developing diabetes.

These inflammatory factors, in the long term, have an impact on the development of type 2 diabetes, aging, heart disease and stroke, noted Dandona.

Blood samples from the participants who received the placebo showed no change in these pro-inflammatory markers.

While these results are promising, Dandona added a caveat: The study didn't eliminate the possibility that something in the extract other than resveratrol was responsible for the anti-inflammatory effects.

"The product we used has only 20 percent resveratrol, so it is possible that something else in the preparation is responsible for the positive effects. These agents could be even more potent than resveratrol. Purer preparations now are available and we intend to test those."

Provided by University at Buffalo

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