Red wine ingredient wards off effects of age on heart, bones, eyes and muscle

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Large doses of a red wine ingredient can ward off many of the vagaries of aging in mice who begin taking it at midlife, according to a new report published online on July 3rd in *Cell Metabolism*, a Cell Press publication. Those health improvements of the chemical known as resveratrol—including cardiovascular benefits, greater motor coordination, reduced cataracts and better bone density—come without necessarily extending the animals' lifespan.

Sinclair and de Cabo's team further show evidence that resveratrol mimics the beneficial effects of eating fewer calories. In mice, they found that resveratrol induces gene activity patterns in multiple tissues that parallel those induced by dietary restriction and every-other-day feeding.

" From a health point of view, the quality of life of these mice at the end of their days is much better," said Rafael de Cabo of the National Institute on Aging. It suggests that resveratrol may "extend productive independent life, rather than just extending life span."

" I was most surprised by how broad the effects were in the mice," added David Sinclair of Harvard Medical School. "Usually, you focus on slowing down or ameliorating one disease at a time. In this case, resveratrol influences a whole series of seemingly unrelated diseases associated with aging." Sinclair said he expects some of the effect seen in the mice would have even greater impact if they hold in humans. That's because, unlike people, mice usually don't die as a result of heart

disease, or suffer from weakening bones.

Earlier studies showed that reducing calorie intake by 30%□□%, or eating a nutritious diet every other day, can delay the onset of age-related diseases, improve stress resistance, and decelerate functional decline, the researchers said. Although dietary restriction has beneficial effects in humans, such a diet is unlikely to be widely adopted and would pose a significant risk to the frail, critically ill, or the elderly.

Therefore, the researchers are on a quest for "dietary restriction mimetic" compounds that provide some of the benefits without cutting calories. One contender has been compounds like resversatrol that activate SIRT1, a protein linked to long life in many species, from yeast to mammals.

Resveratrol produced changes in the gene expression profiles of key metabolic tissues, including liver and muscle, that closely resemble those induced by dietary restriction, they report. Overall, the animals' health improved under all dietary conditions, as reflected by a reduction of osteoporosis, cataracts, vascular dysfunction, and declines in motor coordination. However, the mice lived longer only when they were fed a high-calorie diet, consistent with earlier reports.

" In conclusion, long-term resveratrol treatment of mice can mimic transcriptional changes induced by dietary restriction and allow them to live healthier, more vigorous lives," they wrote. "In addition to improving insulin sensitivity and increasing survival in [high-calorie fed] mice, we show that resveratrol improves cardiovascular function, bone density, and motor coordination, and delays cataracts, even in nonobese rodents. Together, these findings confirm the feasibility of finding an orally available dietary restriction mimetic."

Resveratrol treatment is already being tested in clinical trials for type II

diabetes, the researchers noted, and more potent molecules with effects similar to resveratrol are also under development.

Source: Cell Press