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Grape Compound Prolongs Life, Fish Study Concludes

By David Biello

grapes, resveratrol

An organic compound found in grapes, berries and some nuts extended the life span of fish in a recent study. *Nothobranchius furzeri* lives an average of nine weeks in captivity but lacing its food with resveratrol boosted longevity by more than 50 percent.

Previous research had shown that resveratrol prolongs the life span of yeast and insects, but this study marks the first proof of its antiaging effects in a vertebrate. Neuroscientist Alessandro Cellerino and his colleagues at the Scuola Normale Superiore in Pisa, Italy, tested different doses of the compound on more than 150 fish. Thirty fish received a small dose in their regular food, 60 received a medium dose and 20 received a large helping; meanwhile, 47 control fish enjoyed their insect larvae meals sans resveratrol. The control and low-dose fish saw no benefits, but even the fish who received only a middling amount of the compound lived up to 27 percent longer.

The resveratrol-fed fish also showed more vivaciousness, swimming more than their counterparts even as they aged up to 10 weeks. Old fish that ate resveratrol were able to complete tasks, such as remembering to move from one compartment to another when a light was flashed, much better than the controls did. And dissection showed that the neurons in their brains did not decay as fast as those of the untreated fish did, leading the researchers to speculate that resveratrol could be prolonging life by protecting the central nervous system.

The compound, particularly concentrated in red wines such as pinot noir, seems to confer protective effects across a wide range of animals, leading to hopes that it might prove a potent boon for humans as well. "The mechanisms by which resveratrol prolongs life span in model organisms are not clear," Cellerino's team writes in the paper presenting the findings, published today in *Current Biology*. "But the observation that its supplementation with food extends vertebrate life span and delays motor and cognitive age-related decline could be of high relevance for the prevention of aging-related diseases in the human population."

Resveratrol,

Powerful Protection Against Prostate Cancer - "Resveratrol works through more than a dozen different anticancer mechanisms and selectively targets cancer cells. This single supplement modulates hormones, has several mechanisms that stop cancer cells from multiplying, and even has the ability to destroy cancer cells"

Researchers at the University of North Carolina Medical School Confirm Antioxidant Compound Found in Red Wine Fights Cancer.

Researchers believe they have unlocked the mystery of how an antioxidant found

in grapes and red wine fights cancer. A study published in the July edition of the journal *Cancer Research* concludes that the compound resveratrol, which acts like an antibiotic to protect grapes from fungus, may turn off a protein that guards cancer cells from cancer-fighting therapies such as chemotherapy.

The research may one day allow the compound itself to be used in cancer prevention and treatment, said Minnie Holmes-McNary, a nutritional biologist at the University of North Carolina's medical school in Chapel Hill.

"The benefit is that it certainly provides an open door for potential therapies," said Holmes-McNary, the study's lead author. That may include taking a pill similar to a vitamin supplement. The benefits of drinking a glass of red wine have been touted over the past decade after the discovery of the "French paradox" - that the French had low rates of heart disease despite high-cholesterol diets.

Studies have shown the key may be the glass or two of red table wine at dinner. A few years ago, researchers found that resveratrol kept cells from turning cancerous and stopped the spread of malignancies. Resveratrol also blocked cell inflammation, which is linked to arthritis and other diseases.

Researchers at the University of Illinois at Chicago studied the effect of a methanol soluble pinot noir red wine extract, a concentrated extract, and resveratrol from red wine on two strains of cultured cells infected with *Chlamydia pneumoniae*, a bacterium responsible for up to 30 percent of acute respiratory tract infections that has also been found to be associated with atherosclerotic plaque development and coronary heart disease. Both the concentrated pinot noir extract and the resveratrol proved to be active against the two *Chlamydia* strains.

Holmes-McNary and co-author Albert Baldwin Jr. at the medical school's Lineberger Comprehensive Cancer Center wanted to know how resveratrol kills cancer cells. The researchers used previous research by Baldwin and others that determined the protein called NF-kappa B enabled tumor cells to survive even chemotherapy. When NF-kappa B is blocked in mice - as observed last year in a study - the cancer cells were eradicated by the chemotherapy. Holmes-McNary and Baldwin tested how cultured human and animal tumor cells reacted to the resveratrol, learning that it effectively turned off the NF-kappa B cancer gene. Untreated tumors continued to thrive, Holmes-McNary said.

Discovering the mechanisms of resveratrol is important to developing the compound as a cancer-preventive agent for humans, said John Pezzuto, a University of Illinois at Chicago researcher who first reported resveratrol's link to red wine and fighting cancer in 1997.

"It's a good contribution," Pezzuto said of the study. "It seems like there are multiple mechanisms. In the end, there may be a common thread to all of them. It's like we're laying down pieces of the puzzle. This is one of those pieces."

The study, funded by the National Institutes of Health and the North Carolina chapter of the American Heart Association, also found muscadine wines contain up

to seven times more resveratrol than regular wines.

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