

## Red-Wine Compound May Protect Against Effects of Radiation Poisoning

New study finds that resveratrol may help protect human cells against exposure to nuclear material; resveratrol-based drug increased survival rates of mice exposed to radiation by more than 250 percent

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There's even more reason to convert that old bomb shelter in the backyard into a wine cellar today. Scientists at the University of Pittsburgh have published a new study indicating that resveratrol, a compound found in red wine, may help human cells survive exposure to radiation. While nuclear attack may come to mind in respect to radiation exposure and in light of terrorist threats, the drug would also be useful in the event of reactor spills or radiation leaks at hospitals or labs.

Researchers at the University of Pittsburgh's School of Health Sciences, under the guidance of lead scientist Dr. John Greenberger, published a study indicating that a resveratrol-based drug called JP4-039 could counter the effects of radiation exposure. (A pure form of resveratrol in its natural state was also tested and showed improved cell-survival rates, but not as markedly as the modified resveratrol drug.) The nontoxic drug, which scientists have been testing since 2004, can help mitochondria, the energy-producing bodies in human cells, combat cell death due to exposure to radiation. In past studies, resveratrol has been shown to beneficially stimulate mitochondria.

In initial studies, funded by a \$10 million grant from the National Institute of Allergy and Infectious Disease, researchers observed tissue cultures incubated with the resveratrol-based drug after being given a large dose of radiation. When the number of surviving cells were counted, researchers found that the drug was effective in saving cells; additional tests on animals had the same results. In the animal studies, 80 percent of mice treated with the resveratrol-based drug after radiation exposure survived, compared with a 30 percent survival rate for untreated mice.

Researchers warned that individuals cannot get the same potency from drinking wine or ingesting other resveratrol-derived products in the event of an emergency. They hypothesize that resveratrol, an antioxidant compound, may act as a natural protector in the same manner as vitamin E or vitamin C, which can help the body resist radiation damage. Greenberger added that people cannot get the same protection by simply drinking or eating certain antioxidant-rich foods. He gave the example of curcumin, the substance found in curry powder that is a natural radiation protector. A person would have to ingest several ounces or more of the powder to get similar results to those produced by the resveratrol compound being tested. In the end, it may cause more discomfort than help.

"You would not be able to duplicate our results by just drinking wine," Greenberger said. "The problem is the dosing. The dosage you would need to get levels up high enough in humans would be very large amounts. You couldn't just drink the wine or eat the grapes—you wouldn't get enough [resveratrol]."

He added that someone would have to drink approximately 720 bottles of wine to match the results of the resveratrol compound they've created. "By the time someone drank that much wine," joked Greenberger, "you wouldn't have to worry about the radiation anymore."

Greenberger and his team are continuing their research and hope to gain FDA clearance and begin clinical trials soon.

"We are unprepared," said Greenberger. "We just do not have enough resources in our national stockpile to combat radiation terrorism. My biggest concern is if we have a dirty bomb or other radiological device—people could be hit with uranium or plutonium, or worse ... like Hiroshima or Nagasaki. There could be people who do not have obvious burns or concussions who will have significant body radiation doses and will need some kind of therapy to help them recover. What we need is something safe that we can give to everybody, whether they have a small dose or fairly large dose of radiation."