Study indicates grape seed extract may reduce cognitive decline associated with Alzheimer's disease

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A compound found in grape seed extract reduces plaque formation and resulting cognitive impairment in an animal model of Alzheimer's disease, new research shows. The study appears in the June 18 issue of *The Journal of Neuroscience*.

Lead study author Giulio Pasinetti, MD, PhD, of Mount Sinai School of Medicine and colleagues found that the grape seed extract prevents amyloid beta accumulation in cells, suggesting that it may block the formation of plaques. In Alzheimer's disease, amyloid beta accumulates to form toxic plaques that disrupt normal brain function.

The researchers tested a grape seed polyphenolic extract product sold as *MegaNatural-AZ*, made by Polyphenolics, which in part supported the study. Polyphenolic compounds are antioxidants naturally found in wine, tea, chocolate, and some fruits and vegetables. To determine whether the extract could mitigate the effects of Alzheimer's disease, the researchers used mice genetically modified to develop a condition similar to Alzheimer's disease. They exposed pre-symptomatic "Alzheimer's mice" to the extract or placebo daily for five months. The daily dose of the polyphenolic extract was equivalent to the average amount of polyphenolics consumed by a person on a daily basis.

After the five-month period, Alzheimer's mice were at an age at which they normally develop signs of disease. However, the extract exposure reduced amyloid beta accumulation and plaque formation in brains of Alzheimer's mice and also reduced cognitive decline: compared to placebo, extract-exposed Alzheimer's mice showed improved spatial memory. These data suggest that before symptoms begin, the grape seed extract may prevent or postpone plaque formation and slow cognitive deterioration associated with Alzheimer's disease.

Moderate consumption of red wine—approximately one glass for women and two glasses for men, according to the Food and Drug Administration—and its constituent grape compounds has reported health benefits, particularly for cardiovascular function. Pasinetti previously found that red wine reduced cognitive decline in mice genetically modified to develop Alzheimer's disease. In subsequent studies, Pasinetti and colleagues have attempted to isolate which of the nearly 5,000 molecules contained in red wine are important in disease prevention. "Our intent is to develop a highly tolerable, nontoxic, orally available treatment for the prevention and treatment of Alzeheimer's dementia," Pasinetti said.

"The potential of natural compounds to provide real health benefits to brain function is only now beginning to be realized by brain researchers. The lesson they may eventually learn is that sometimes you just can't improve upon Mother nature," said Gary Arendash, PhD, of The Byrd Alzheimer's Institute, an expert unaffiliated with the study.

Chemical analysis showed that the major polyphenol components in the study's grape seed extract product are catechin and epicatechin, which are also abundant in tea and cocoa. These components differ from resveratrol, a polyphenol that has been reported to reduce amyloid beta secretion in cells and generally increase lifespan by mimicking calorie restriction. Resveratrol appears to be effective only at extremely high doses, which may limit its use in people. In contrast, the catechins in the extract product studied appear to be effective at much lower doses.

Karen Hsiao Ashe, MD, PhD, at the University of Minnesota and Minneapolis VA Medical Center,

another expert unaffiliated with the study, cautioned that additional research must be completed before these findings translate to a human population. "Unanswered questions pertaining to the polyphenolic extract's use in humans to prevent Alzheimer's disease include: when to start taking it, for how long, how much to take, and most importantly, how does a person know if it is helping to prevent the aggregation of amyloid beta protein in the brain? These questions must be answered before polyphenolics can be recommended as a preventive measure for Alzheimer's disease," Ashe said.

Source: Society for Neuroscience