Eating berries may activate the brain's natural housekeeper for healthy aging

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Many berries, including blueberries, could help protect the brain against aging. Credit: Jim Clark

Scientists today reported the first evidence that eating blueberries, strawberries, and acai berries may help the aging brain stay healthy in a crucial but previously unrecognized way. Their study, presented at the 240th National Meeting of the American Chemical Society (ACS), concluded that berries, and possibly walnuts, activate the brain's natural "housekeeper" mechanism, which cleans up and recycles toxic proteins linked to age-related memory loss and other mental decline.

Shibu Poulose, Ph.D., who presented the report, said previous research suggested that one factor involved in aging is a steady decline in the

body's ability to protect itself against inflammation and oxidative damage. This leaves people vulnerable to degenerative brain diseases, heart disease, cancer, and other age-related disorders.

"The good news is that natural compounds called polyphenolics found in fruits, vegetables and nuts have an antioxidant and anti-inflammatory effect that may protect against age-associated decline," said Poulose, who is with the U. S. Department of Agriculture-Agricultural Research Service (USDA-ARS) Human Nutrition Research Center on Aging in Boston. Poulose did the research with James Joseph, Ph.D., who died June 1. Joseph, who headed the laboratory, pioneered research on the role of antioxidants in fruits and nuts in preventing age-related cognitive decline.

Their past studies, for instance, showed that old laboratory rats fed for two months on diets containing 2 percent high-antioxidant strawberry, blueberry, or blackberry extract showed a reversal of age-related deficits in nerve function and behavior that involves learning and remembering.

In the new research, Poulose and Joseph focused on another reason why nerve function declines with aging. It involves a reduction in the brain's natural house-cleaning process. Cells called microglia are the housekeepers. In a process called autophagy, they remove and recycle biochemical debris that otherwise would interfere with brain function.

"But in aging, microglia fail to do their work, and debris builds up," Poulose explained. "In addition, the microglia become over-activated and actually begin to damage healthy cells in the brain. Our research suggests that the polyphenolics in berries have a rescuing effect. They seem to restore the normal housekeeping function. These findings are the first to show these effects of berries."

The findings emerged from research in which Joseph and Poulose have

tried to detail factors involved in the aging brain's loss of normal housekeeping activity. Using cultures of mouse brain cells, they found that extracts of berries inhibited the action of a protein that shuts down the autophagy process.

Poulose said the study provides further evidence to eat foods rich in polyphenolics. Although berries and walnuts are rich sources, many other fruits and vegetables contain these chemicals — especially those with deep red, orange, or blue colors. Those colors come from pigments termed anthocyanins that are good antioxidants. He emphasized the importance of consuming the whole fruit, which contains the full range of hundreds of healthful chemicals. Frozen berries, which are available year round, also are excellent sources of polyphenolics, he added.

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