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COMMUNICATIONS & MARKETING

NEWS RELEASE

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UMass Lowell Research Shows Benefits of Apple Juice on Neurotransmitter Affecting Memory

LOWELL – For those who think that apple juice is a kid’s drink, think again. Apples and apple juice may be among the best foods that baby boomers and senior citizens could add to their diet, according to new research that demonstrates how apple products can help boost brain function similar to medication.

Animal research from the University of Massachusetts Lowell (UML) indicates that apple juice consumption may actually increase the production in the brain of the essential neurotransmitter acetylcholine, resulting in improved memory. Neurotransmitters such as acetylcholine are chemicals released from nerve cells that transmit messages to other nerve cells. Such communication between nerve cells is vital for good health, not just in the brain, but throughout the body.

“We anticipate that the day may come when foods like apples, apple juice and other apple products are recommended along with the most popular Alzheimer’s medications,” says Thomas Shea, Ph.D., director of the UML Center for Cellular Neurobiology and Neurodegeneration Research.

The study will be published in the August issue of the international *Journal of Alzheimer’s Disease*. The abstract is now available online at <http://www.j-alz.com/issues/9/vol9-3.html>.

The role of acetylcholine in the brain is not a new area of research. Alzheimer’s medication studies start with the premise that increasing the amount of acetylcholine in the brain can help to slow mental decline in people with Alzheimer’s disease. Testing a similar hypothesis, the UML research team found that having animals consume antioxidant-rich apple juice had a comparable and beneficial effect.

In this novel animal study at UML, adult (9-12 months) and old (2-2.5 years) mice, some specially bred to develop Alzheimer’s-like symptoms, were fed three different diets (a

standard diet, a nutrient-deficient diet, and a nutrient-deficient diet supplemented with apple components (in this case, apple juice concentrate was added to their drinking water).

Among those fed the apple juice-supplemented diet, the mice showed an increased production of acetylcholine in their brains. Also, after multiple assessments of memory and learning using traditional Y maze tests, researchers found that the mice who consumed the apple juice-supplemented diets performed significantly better on the maze tests.

“It was surprising how the animals on the apple-enhanced diets actually did a superior job on the maze tests than those not on the supplemented diet,” remarks Dr. Shea.

Earlier studies by Shea’s research team had strongly suggested apples must possess a unique mix of antioxidants that improve cognition and memory via inhibition of oxidation in the brain. Those results encouraged Shea to evaluate the neurotransmitter effect, as is done in the current study. Medications given to humans with Alzheimer’s disease have been shown to inhibit the production of specific enzymes (cholinesterase inhibitors) that break down acetylcholine in the brain. The end result in the animal study is similar – there are more of these critical messengers remaining in the brain to enhance memory.

The results obtained were from the animals consuming moderate amounts of apple juice - comparable to drinking approximately two 8 oz. glasses of apple juice or eating 2-3 apples a day. The findings also suggest that the apple-supplemented diet was most helpful in the framework of an overall healthy diet.

Shea concludes, “The findings of the present study show that consumption of antioxidant-rich foods such as apples and apple juice can help reduce problems associated with memory loss.”

Shea also notes that a human clinical study evaluating consumption of apple products will begin in the near future.

This study was sponsored through an unrestricted grant by the U.S. Apple Association and the Apple Products Research and Education Council.

UMass Lowell, www.uml.edu, a comprehensive university with a national reputation in science, engineering and technology, is committed to educating students for lifelong success in a diverse world and conducting research and outreach activities that sustain the economic, environmental and social health of the region. UML offers its 11,000 students more than 120 degree choices, internships, five-year combined bachelor’s to master’s programs and doctoral studies in the colleges of Arts and Sciences, Engineering and Management, the School of Health and Environment, and the Graduate School of Education.

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