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Magnesium Supplement Helps Boost Brainpower

Feb. 2, 2010 — New research finds that an increase in brain magnesium improves learning and memory in young and old rats. The study, published in the January 28th issue of the journal *Neuron*, suggests that increasing magnesium intake may be a valid strategy to enhance cognitive abilities and supports speculation that inadequate levels of magnesium impair cognitive function, leading to faster deterioration of memory in aging humans.

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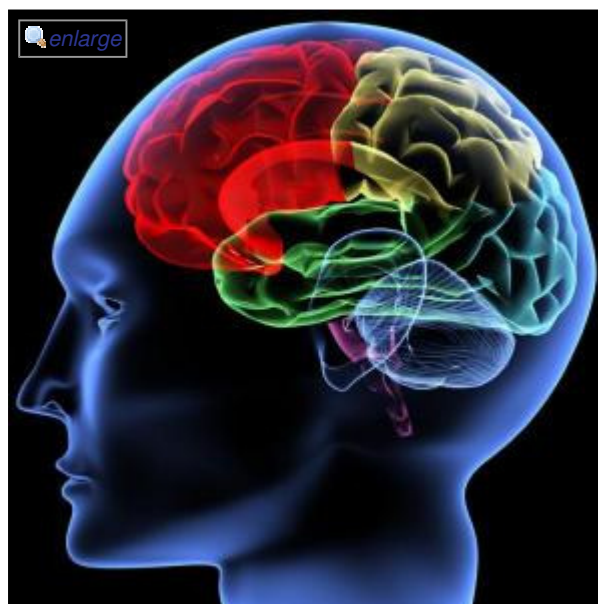
Diet can have a significant impact on cognitive capacity. Identification of dietary factors which have a positive influence on synapses, the sites of communication between neurons, might help to enhance learning and memory and prevent their decline with age and disease. Professor Guosong Liu, Director of the Center for Learning and Memory at Tsinghua University in Beijing, China, led a study examining whether increased levels of one such

dietary supplement, magnesium, boosts brain power.

"Magnesium is essential for the proper functioning of many tissues in the body, including the brain and, in an earlier study, we demonstrated that magnesium promoted synaptic plasticity in cultured brain cells," explains Dr. Liu. "Therefore it was tempting to take our studies a step further and investigate whether an increase in brain magnesium levels enhanced cognitive function in animals."

Because it is difficult to boost brain magnesium levels with traditional oral supplements, Dr. Liu and colleagues developed a new magnesium compound, magnesium-L-threonate (MgT) that could significantly increase magnesium in the brain via dietary supplementation. They used MgT to increase magnesium in rats of different ages and then looked for behavioral and cellular changes associated with memory.

"We found that increased brain magnesium enhanced many different forms of learning and memory in both young and aged rats," says Dr. Liu. A close examination of cellular changes associated with memory revealed an increase in the number of functional synapses, activation of key signaling molecules and an enhancement of short- and long-term synaptic processes that are crucial for learning and memory.



Increasing magnesium intake may be a valid strategy to enhance cognitive abilities. (Credit: iStockphoto/Vasiliy Yakobchuk)

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The authors note that the control rats in this study had a normal diet which is widely accepted to contain a sufficient amount of magnesium, and that the observed effects were due to elevation of magnesium to levels higher than provided by a normal diet.

"Our findings suggest that elevating brain magnesium content via increasing magnesium intake might be a useful new strategy to enhance cognitive abilities," explains Dr. Liu. "Moreover, half the population of industrialized countries has a magnesium deficit, which increases with aging. This may very well contribute to age-dependent memory decline; increasing magnesium intake might prevent or reduce such decline."

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1. Inna Slutsky, Nashat Abumaria, Long-Jun Wu, Chao Huang, Ling Zhang, Bo Li, Xiang Zhao, Arvind Govindarajan, Ming-Gao Zhao, Min Zhuo, Susumu Tonegawa and Guosong Liu. **Enhancement of Learning and Memory by Elevating Brain Magnesium.** *Neuron*, Jan. 28, 2010

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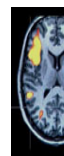
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