Brainy beverage: Study reveals how green tea boosts brain cell production to aid memory

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Green tea. Credit: Wikimedia Commons

It has long been believed that drinking green tea is good for the memory. Now researchers have discovered how the chemical properties of China's favorite drink affect the generation of brain cells, providing benefits for memory and spatial learning. The research is published in *Molecular Nutrition & Food Research*.

"Green tea is a popular beverage across the world," said Professor Yun Bai from the Third Military Medical University, Chongqing, China. "There has been plenty of scientific attention on its use in helping prevent cardiovascular diseases, but now there is emerging evidence that its chemical properties may impact cellular mechanisms in the brain."

Professor Bai's team focused on the organic chemical EGCG, (epigallocatechin-3 gallate) a key property of green tea. While EGCG is a known anti-oxidant, the team believed it can also have a beneficial effect against age-related degenerative diseases.

"We proposed that EGCG can improve cognitive function by impacting the generation of neuron cells, a process known as neurogenesis," said Bai. "We focused our research on the hippocampus, the part of the brain which processes information from short-term to long-term memory."

The team found that ECGC boosts the production of neural progenitor cells, which like stem cells can adapt, or differentiate, into various types of cells. The team then used laboratory mice to discover if this increased cell production gave an advantage to memory or spatial learning.

"We ran tests on two groups of mice, one which had imbibed ECGC and a control group," said Bai. "First the mice were trained for three days to find a visible platform in their maze. Then they were trained for seven days to find a hidden platform."

The team found that the ECGC treated mice required less time to find the hidden platform. Overall the results revealed that EGCG enhances learning and memory by improving object recognition and spatial memory.

"We have shown that the organic chemical EGCG acts directly to increase the production of neural progenitor cells, both in glass tests and in mice," concluded Bai. "This helps us to understand the potential for EGCG, and green tea which contains it, to help combat degenerative diseases and memory loss."

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More information: Yanyan Wang, Maoquan Li, Xueqing Xu, Min Song, Huansheng Tao, Yun Bai, 'Green tea epigallocatechin-3-gallate (EGCG) promotes neural progenitor cell proliferation and sonic hedgehog pathway activation during adult hippocampal neurogenesis," *Mol. Nutr. Food Res.,* 2012, DOI: 10.1002/mnfr.201200035

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