OFFICIAL ABSTRACT and CERTIFICATION

Can Green Tea Alleviate the Effects of Stress Related to Learning and Long-Term Memory in the Great Pond Snail (Lymnaea stagnalis)?

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Lymnaea stagnalis is a pond snail with a simple nervous system. Recent studies have shown the mechanisms of aging neurons in the Lymnaea to be analogous to age-associated diseases of humans and other mammals making Lymnaea an excellent model organism for behavioral studies related to the human nervous system. In this experiment, Lymnaea was used to explore the relationship between green tea, a mixture known to contain flavonoids; compounds that may have a beneficial effect on human learning and memory, and stress known to negatively impact human memory. The purpose of this experiment was to determine the effects of both green tea and stress on the snails ' ability to learn, form, and retain memory. Memory was assessed using an operant conditioning procedure called conditioned taste aversion, which was achieved by exposing the snail to a sweet substance followed by a bitter taste. Thirty-three snails were trained in pond water. After they forgot their training, they were stressed, then retrained and results were compared. The snails were then restressed and exposed to green tea to determine if the green tea would alleviate the effects of stress. Results showed that green tea did improve the memory of the snail, while stress harmed the snails ' learning and memory. However, the green tea was able to alleviate the effects of the stress-induced memory loss in the snails.

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