

Aminothioneine activates BDNF expression and enhances learning and memory in mice.

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The previous study demonstrated that hot water extract of golden oyster mushrooms (Aminothioneine[®]) and ergothioneine, which is a hydrophilic antioxidant and contained at high levels in golden oyster mushrooms, increased neuronal differentiation in the hippocampal dentate gyrus of mice and have antidepressant-like effects in mice. Here, we investigated the effect of Aminothioneine on BDNF expression in primary cultures of cortical cells and learning and memory in mice. In primary cultures of rat cortical cells, Aminothioneine, but not ergothioneine, significantly increased expression levels of BDNF mRNA. Aminothioneine also increased the levels of BDNF expression in the hippocampus of mice. Aminothioneine significantly increased freezing behavior in the test session of the contextual fear conditioning test. In the test session of the novel object location recognition test, Aminothioneine-administered mice spent more time exploring the object at the novel location. Taken together, Aminothioneine increased expression levels of BDNF in cultured neurons and hippocampus of mice. Also, Aminothioneine enhances learning and memory in mice. Because it has been reported that higher expression levels of BDNF are associated with slower cognitive decline during aging, Aminothioneine could act as a memory stabilizer in an aging brain.