



## Protection Effect of an Oligosaccharide Extracted from *Radix Morindae Officinalis* on Senile Dementia in Rats

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**SUMMARY.** Bajijiasu is an oligosaccharide extracted from the traditional Chinese medicine *Radix Morindae Officinalis* (*Morinda officinalis* F.C. How) used for disease about intelligence and memory. The effects of Bajijiasu on learning and non-cognitive disturbances have been confirmed. However, its potential to protect against Alzheimer's disease was not clearly studied. In this work, we want to study the effects of bajijiasu in a rat model of senile dementia and the mechanism. Senile dementia was modeled in rats and bajijiasu was administered for 60 consecutive days by three routes: oral capsules, water solution by gavage, and extracts by gavage. Learning and memory function was assessed with the Morris water maze. We measured brain tissue contents of acetylcholinesterase (AChE), superoxide dismutase (SOD), and malondialdehyde (MDA). Basal forebrain, hippocampal, and cerebral cortex neurons were quantitatively assessed with hematoxylin-eosin (HE) staining and light microscopy. Compared with the model group, rats that received bajijiasu capsules exhibited reduced escape latency and significantly greater SOD activity and reduced MDA content in brain tissue in a dose-dependent manner. All of these measurements were significantly different ( $P < 0.05$ ) in the 240 mg/kg group. Microscopy indicated that except for the 30 mg/kg group, all capsule doses increased the number of neurons in the basal forebrain, hippocampus, and cerebral cortex. Bajijiasu can improve learning and memory abilities, increase SOD activity, reduce MDA levels, and increase neuron quantities in the brain tissue of a rat model of senile dementia induced by D-galactose and aluminum trichloride. These effects may be due to improved brain metabolism.

**KEY WORDS:** AChE, bajijiasu, Brain metabolism, MDA, *Radix Morindae Officinalis*, Senile dementia, SOD.

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