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MUNG BEAN-DERIVED PROTEIN DECREASES MEMORY IMPAIRMENT, OXIDATIVE STRESS AND NEURONAL APOPTOSIS IN HIPPOCAMPUS OF EXPERIMENTAL MENOPAUSE WITH OBESITY

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Obesity during menopause is reported to increase the risk of dementia. Accumulative lines of evidence have demonstrated that both oxidative stress and apoptosis play the crucial role on the neurodegeneration and memory impairment in the mentioned condition. Recent study shows that protein supplementation decreases oxidative stress status and apoptosis so the beneficial effect of mung bean-derived protein on memory and neurodegeneration has gained attention. Since no data are available, we aimed to determine the neuroprotective and memory enhancement effects of mung bean-derived protein in the bilateral ovariectomized (OVX) rats which fed with high fat diet. The alterations of oxidative stress status and apoptosis were also explored for the possible underlying mechanisms. OVX rats were fed with 15% mung bean protein for 8 weeks and the determination of memory performance, acetylcholinesterase (AChE) activity, oxidative stress status and the density of Bax+ and Bcl-2+ stained cells in hippocampus and prefrontal cortex were carried out at the end of study. It was found that mung bean-derived protein supplementation enhanced both spatial memory and non-spatial memory and Bcl-2+ cell density but decrease AChE activity and Bax+ cell density in both hippocampus and cerebral cortex. Therefore, the reductions of oxidative stress status and apoptosis but increase in the cholinergic function in hippocampus and prefrontal cortex were partly responsible for the cognitive enhancement and neuroprotective effect of mung bean-derived protein. These data suggest that mung bean-derived protein may be served as the potential supplement to decrease dementia risk for menopause with obesity. However, the clinical trial study is required to confirm this potential benefit.

Biography

Supaporn Muchmapura has completed her PhD from University of Nottingham. She is the Head of Physiology Department, Faculty of Medicine and also served as the Vice Director of Integrative Complementary Alternative Medicine Research, Khon Kaen University, Khon Kaen, Thailand. She has published more than 30 papers in reputed journals and has many petty patents.

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