

Title EFFECTS OF THE ASPARAGUS RACEMOSUS
ROOT EXTRACT ON LEARNING AND MEMORY
IN OVARIECTOMIZED RATS

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ABSTRACT

Estrogen decline in menopausal women impairs the cognitive function. This change can be ameliorated by estrogen replacement therapy but it causes serious side-effects. *Asparagus racemosus* (AR) is well known for its phytoestrogenic properties while neuroprotective effects of AR in ovariectomized (OVX) model are unknown. This study aimed to investigate effects and mechanisms of the AR root extract on learning and memory in OVX rats. Adult female Wistar rats were divided into five groups and gavaged for 90 days with vehicle (propylene glycol) for sham and OVX groups and another 3 groups of OVX rat were gavaged with 100 and 1000 mg/kg B.W./day of AR root extract or 0.1 mg/kg B.W./day of 17 α -ethynylestradiol, respectively. Novel object recognition test was used to assess learning and memory. Serum estradiol concentration and morphological changes were determined using electrochemiluminescence immunoassay and hematoxylin and eosin staining, respectively. In addition, the expression of brain-derived neurotrophic factor (BDNF), estrogen receptor α and β (ER α and ER β) subtypes were detected by using western blot analysis. In comparison to sham rats, the recognition index, serum estradiol level and intact neuronal density in hippocampus and medial prefrontal cortex significantly decreased in OVX rats. These alternations associated with the decreasing of protein expression of BDNF, ER α and ER β in hippocampus and frontal cortex. AR could reverse the recognition memory impairment, morphological lesion as well as

expression of BDNF, ER α and ER β proteins without change the serum estradiol concentration. This present study suggests that neuroprotective effects of AR root extract in ovariectomy may involve BDNF and ER subtypes up-regulation.