عنوان مقاله:

Thymoquinone recovers learning function in a rat model of Alzheimer's disease

محل انتشار:

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خلاصه مقاله:

Objective: Alzheimer s disease is a neurodegenerative disorder characterized by accumulation of amyloid beta in the hippocampus. In recent decades, herbal medicine has been widely used to treat many neurodegenerative disorders,as in comparison to conventional drugs, herbal remedies exert minimal side effects. Here, the effects of thymoquinone, as the main active component of Nigella sativa, on passive avoidance memory in rat model of Alzheimer's disease, were evaluated. Materials and Methods: Hippocampal injection of amyloid beta (Aβ) was used to induce Alzheimer's disease in male Wistar rats, followed by intra peritoneal administrations of 5 and 10 mg/kg thymoquinone on a daily basis for 4 weeks. Animals were subjected to fear learning behavior in passive avoidance test and histopathological analysis of the hippocampus was done. Shuttle box test was used to evaluate the condition studying memory. Thioflavin-S and Hematoxylin and Eosine staining were done to confirm Aβ plaque formation and to evaluate the effect of thymoquinone on the pyramidal cells in the hippocampal CA1 region. Results: Amyloid beta caused cognitive dysfunction reflected by increasing initial and step-through latency along with plaque formation and degeneration of pyramidal cells in the hippocampus. Thymoquinone administration ameliorated this effect by significant reductions in plaque formation in CA1 region of the hippocampus and increased latency time. It also increased the number of surviving neurons in the hippocampus. Conclusion: It seems that thymoquinone improved learning function in a rat model of Alzheimer's disease. Thus, thymoquinone could be possibly used as an anti-neurodegenerative agent for protecting hippocampal neurons against neurotoxic effects of Aβ in patients with Alzheimer's disease.

کلمات کلیدی:

Alzheimer disease, Thymoquinone, Rat, amyloid beta, Nigella Sativa