عنوان مقاله:

Berberis vulgaris extract-based Fe۳O۴ nanocomposites affect NMDA۱ function and physical activity: Analysis of Grin۱ expression in Syrian mice model of Experimental autoimmune encephalomyelitis

محل انتشار:

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خلاصه مقاله:

Background: Ionotropic glutamate NMDA receptors are multi-subunit proteins with few selective pharmacological ligands and are tentatively implicated in MS and other neurodegenerative disorders. The present study was aimed at evaluating the antioxidant properties of Berberis vulgaris extract-loaded magnetite nanoparticles on the Grin۱ gene expression in NMDA receptor in EAE Syrian mice.Methods: EAE mice models were generated through active immunization with MBP and PTx and kept for days ۹-۱۴ until EAE signs appeared followed by administration of barberry extract loaded magnetic nanoparticles.Results: Pure BE concentrations did not show recovery signs until days ۷-۹, but partial recovery in tail movement was seen on days ۱۱ and ۱۴, which was significant as compared to the control group in terms of improvement of the clinical scores. Meanwhile bare nanoparticles had neither disease recovery/progression properties nor EAE mice mortality as compared to controls, but ۱ mg BE + Fe۳O۴ reduced EAE symptom severity and resulted in significant improvement of hind limb sensitivity to toe pinching and improved tail movements. Meanwhile ۲ mg Be + Fe۳O۴ showed much better sensitivity to toe pinching and complete tail recovery. qRT-PCR analysis showed a significant decrease in relative Grin۱ expression in female mice after treatment with ۰.۲ and ۱ mg BE. However, a profound decrease in Grin۱ expression was seen at ۰.۲, ۱ and ۲ mg BE + Fe۳O۴ treated groups in a dose-dependent manner.Conclusion: The results indicated that Fe۳O۴+ BE could alleviate the EAE severity and progression

کلمات کلیدی:

NMDA, neuroprotection, Grin۱, Syrian mice, Berberis vulgaris