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Poster Presentation

Effect of Hesperetin Nanoparticles on Cerebral Gene Expression and Activity of Catalase and Superoxide Dismutase in Alzheimer's Rat

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Abstract

Hesperetin (Hst) is a well-known bioflavonoid, has low bioavailability. Hesperetin nanoparticles (Nano-Hst) enhance its bioavailability. Nano-Hst were not explored for their potential therapeutic activities in Alzheimer's disease (AD). Hence, the present study was performed to evaluate the protective effect of Nano-Hst in comparison to free Hesperetin on against intracerebroventricular injection of streptozotocin (icv-STZ) induced cerebral gene expression and activity antioxidant enzymes impairments in rat model. Nano-Hst prepared by evaporative precipitation of nanosuspension (EPN) method. The rats were divided into six groups including: Control (received water orally and icv-saline), disease group (received 3 mg/kg/rat icv-STZ) and treated groups received Hst and Nano-Hst (10, 20 mg/kg/d) for 3 weeks after icv-STZ. Activity and gene expression of catalase (CAT) and superoxide dismutase (SOD) were measured in the cerebral cortex. Our result showed that the rat model of AD decreased activity and gene expression of CAT and SOD ($p < 0.001$). Hst and nano-Hst treatment elevated the activities and gene expression of these enzymes ($p < 0.01$). Gene expression studies of antioxidant enzymes using Real Time PCR confirmed the enzymes activity. These results indicate that Nano-Hst was more effective than Hst to attenuation oxidative stress induced by STZ in a rat model of Alzheimer's disease.

Keywords: Nano-Hesperetin, Alzheimer's Disease, Streptozotocin

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