

Neuroprotective Effect of Perillyl alcohol in Experimental Sporadic Alzheimer's disease

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BACKGROUND:-Alzheimer's is the most common neurodegenerative disorder characterized by memory loss due to the accumulation of amyloid- β fibrils. There are different pathologies that count for AD-like neuro-inflammation. This study highlights the role of oxidative stress and inflammation in the progression of AD whereas Perillyl alcohol (POH) shows ant oxidative & anti-inflammatory properties.

MATERIAL: -54 Sprague Dawley ICV-STZ (3mg/kg) rats (250-300g, 7-8 weeks) were treated with three different doses of Perillyl alcohol (25, 50, and 100mg/kg p.o.) for 13 days from 15th to 27th day. Weight measured on 1st and 28th day. The behavioral analysis had done using OFT and MWM.

RESULT: -Perillyl alcohol treatment significantly attenuates declined body weight in ICV-STZ induced dementia in rats, showed a significant increase in crossing number, and active time. Dementia-induced rats were unable to discriminate familiar and novel objects, which is improved by POH. POH attenuates STZ induced acquisition deficits and retention time, increased MDA and nitrite levels. POH attenuated depleted levels of GSH, Catalase, SOD comparable to standard drug donepezil, POH decreased AChE levels in the cortex and hippocampus.

DISCUSSION: - Study suggests the neuroprotective potential of Perillyl alcohol against ICV-STZ administration of streptozotocin-induced behavioral and biochemical abnormalities. Biventricular STZ infusion produced significant impairment in learning, memory, cholinergic hypofunction, and elevation in hippocampal oxidative stress in rats. POH administration significantly attenuated STZ induced biochemical consequences. Observed beneficial effects of POH include restored cholinergic functions and antioxidant mechanisms.

Key Words: - Alzheimer's, neuro-inflammation, perillyl alcohol, streptozotocin, neurodegeneration