

## ABSTRACT

### **A Study of The Effects Of Hydrogen Peroxide On Memory, Expression Of Neuronal Proteins And Free Radical Markers In Rat Brain**

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Hydrogen peroxide is associated with oxidative stress but, its exact role in dementia related diseases, such as, Alzheimer's disease is still unknown. The aims of the present study were: (1) to investigate the effects of hydrogen peroxide on memory, expression of neuronal proteins and free radical markers in rat brain and (2) to investigate whether or not some novel natural and synthetic antioxidants could reverse and/or slow down the effects of oxidative brain damage.

The results of the present study indicate that retention memory was significantly affected following intracerebroventricular injection of hydrogen peroxide. The hippocampal CA1 field was most susceptible to neurodegeneration and showed a high concentration of neuronal proteins. A significant reduction in choline acetyltransferase was observed in the hippocampus, neocortex and nucleus basalis of Meynert.

In addition, the hippocampus showed the most significant antioxidant enzyme impairment with increased lipid peroxidation. Supplementation with garlic, vitamin E or L-2-oxothiazolidine-4-carboxylic acid before lesioning reduced the above pathological changes to a near normal state.