

## **NEUROPROTECTION AGAINST KAINIC ACID-INDUCED OXIDATIVE STRESS IN MICE BY POLYPHENOLIC FRACTION OF ASPARAGUS RACEMOSUS AND WITHANIA SOMNIFERA**

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Reactive oxygen species (ROS) that are generated extracellularly and intracellularly by various mechanisms are among the major risk factors that initiate and promote neurodegeneration. Therefore, it is important to find the compound which retard or reverse the neuronal injury. Plant polyphenols have been proposed to exert beneficial effects in a multitude of disease states, including neurodegenerative disorders. Many of the biological actions of plant polyphenols have been attributed to their antioxidant properties, either through their reducing capacities per se or through their possible influences on intracellular redox status. We designed this study to investigate the potential of extracts of *Asparagus racemosus* (AR) and *Withania somnifera* (WS) against kainic acid (KA)-induced hippocampal and striatal neuronal damage. The doses of AR and WS extracts given to experimental animals were based on the evaluation of their total antioxidant activity. Extracts of AR and WS displayed potent reductant of Fe(3+). The excitotoxic lesion in brain was produced by intra-hippocampal and intra-striatal injections of kainic acid (KA; 0.25 µg in a volume of 0.5 µl) to ketamine and xylazine (200 and 2 mg/kg b.w. respectively) anesthetized mice. The results showed impairment of hippocampus and striatal regions of brain after KA injection marked by an increase in lipid peroxidation and protein carbonyl content and decline in glutathione peroxidase (GPx) activity and reduced glutathione (GSH) content. The AR and WS extracts supplemented mice displayed an improvement in GPx activity and GSH content and reduction in lipid peroxidation and protein carbonyl. Although the major factors involved in these properties of phytochemicals remain to be specified, the findings of this study have suggested that phytochemicals present in plant extracts attenuate the effects of KA-induced oxidative damage in hippocampus and striatum and this might be accomplished by their antioxidative properties.