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Influence of DNA repair on cognitive function and autophagy in stress induced rats and its modulation by Shankhpushpi Rasayana

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The phenomenon of ageing is universally conserved in eukaryotes. Brain is one of the significantly affected organs during ageing, due to inability of brain cells to divide and differentiate. Aged brain shows impairment in several functions such as cognition, reasoning capacity, phonemic memory and vocabulary. Traditional system of Indian "Ayurveda" emphasizes on improved healthy life. Shankhpushpi, one of the medhya rasayana has been used to enhance memory through rejuvenation of the nervous tissue hence improves health of brain cells during ageing. However, the evidences of such biological effects of Shankhpushpi on brain functions are not very well understood. Deregulation of signaling pathways related to cognition, DNA repair and autophagy have been associated with brain ageing. Hence, in the present study we attempt to elucidate effects of Shankhpushpi prepared from *Clitorea ternatea* on stereotaxic mediated kainate injury during ageing in rat model. Stereotaxic stress induced adult rats, administered with Shankhpushpi Rasayana for consecutive 60 days with jaggery as placebo showed an increased constitutive base excision repair. We observed potentiation of cell viability/cellularity in hippocampus region. On the other hand, decrease in levels of light chain-3 protein and cadaverine uptake suggested reduction of autophagy in brain tissues. Gene expression microarray analysis revealed Rasayana treatment enhanced the expression of neurotransmitter receptor genes in the hippocampus of adult rats. Rasayana treatment improved episodic memory in stereotaxic stress induced young and adult rats. Our study reveals molecular basis of beneficial effects of Shankhpushpi Rasayana in the context of ageing.

Biography

K S Raghu has completed his MSc in Bioscience (2009) from University of Mysore, Mysore. Currently, he is pursuing PhD in Department of Ageing Research at School of Life Sciences, Manipal University, India.

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