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Protective effect of hesperetin against acrylamide induced acute toxicity in rats

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Hesperetin (5,7,3'-trihydroxy-4-methoxyl flavanone) is found in citrus fruits and has antioxidant, anti-inflammatory, anticarcinogenic, antihypertensive and antiatherogenic effects. Acrylamide (AA) has shown neurotoxic and carcinogenic effects in humans with occupational exposures and quantified in staple foods such as coffee, bread, cookies, french fries and in tobacco smoke. In this study, we have evaluated therapeutic efficacy of hesperetin against AA toxicity. AA was given at 1/3rd of LD_{50} dose for 10 days to albino rats followed by therapy with different doses of hesperetin for 3 consecutive days. Various toxicity symptoms were observed which include significant reduction of body weight, hair loss, hindlimb splaying, dragging of back legs and irritation on skin. Toxicity symptoms also included significant reduction in level of heamoglobin, GSH, SOD, CAT and significant enhance in AST, ALT, albumin, urea, creatinine, triglyceride, cholesterol with LPO as compared to control group. Activity of acetylcholinesterase was also declined significantly after AA administration, which confirms neurotoxicity. Histopathological observations also supported biochemical studies. Administration of hesperetin at different doses brought the studied parameters towards control in a dose dependent manner concluding its therapeutic effects against acrylamide toxicity in rats.

Keywords: AChE, Oxidative stress, Liver and kidney function test