

The Use of Some Plant Extracts to Reduce Acrylamide Toxicity in Some Foods

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ABSTRACT

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The Use of Some Plant Extracts to Reduce Acrylamide Toxicity in Some Foods

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The present study investigated the acrylamide content in some Egyptian food stuffs, (Chips, Batte, Roast coffee) as well as the protective effect of garlic, thyme and allspice on acrylamide content. Acrylamide content in final product were quantified by HPLC. The results showed chips contained the highest content of acrylamide in low economy areas, whereas batte had the highest acrylamide content in high economy areas. In addition, allspice had the highest protective effect on acrylamide content in home made crisps. These results indicate that allspice has promising protective effect on acrylamide content in food staff as a result of its reducing action on acrylamide in home made crisps and the protective effect of allspice (*Pimenta dioica*, L.) aqueous extract on acrylamide (AA) toxicity was evaluated in rats. The rats were feeding crisp potatoes soaked in 20, 40 or 80 ppm of acrylamide with 100 ppm of allspice aqueous extract; others were feeding the same Acrylamide concentrations only. The results revealed that alanine aminotransferase (AST), aspartate aminotransferase (ALT), Total protein (T.P) and acetyl cholinesterase (AChE) of serum and glutathione (GSH) in liver and brain were decreased in rats-treated with acrylamide, while, superoxide dismutase (SOD), glutathione-S-transferase (GST), lipid peroxidation (LPO) in serum, liver and brain were increased. This effect of Acrylamide was attenuated by allspice extract. In liver, the

histopathological changes were elevated by increasing the concentration of acrylamide, appeared as dilated, congestion of blood vessels, dilated and congestion of sinusoids, vacuolation, necrosis areas of hepatocytes, inflammatory cells infiltration in hepatocytes and in portal vein and dissociation of the hepatic cords. In brain frontal cortex most of the pyramidal cells appeared with faintly stained nuclei, darkly stained nuclei and or surrounded by halos with loss of dendrites and vacuolated neuropil, while allspice aqueous extract ameliorates low dose of acrylamide histopathological alternations.

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