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Protective effects of the carotenoids-rich alga *Dunaliella salina* against thioacetamide-induced liver fibrosis in rats

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ABSTRACT

Dunaliella salina is naturally occurring source of beta-carotene which acts as antioxidant and also, it is beneficial in the treatment of liver disorders. The goal of this research is to investigate the impact of *D. salina* algae as an antioxidant on liver fibrosis in rats. In the current investigation, male Albino rats (N= 30 rats) weighing (180-200g) were used. They were separated into five groups: (1) negative control; (2) Positive control which was treated with Thioacetamide (TAA); groups (3), (4), and (5) TAA induced liver fibroses rats fed 100, 200, and 300mg *D. salina* powder/kg diet. The experiment extended to 6 weeks. The following were tested in the serum samples of each group: aspartate aminotransferase "AST", alanine aminotransferase "ALT", alkaline phosphatase, total bilirubin, albumin, Malondialdehyde "MDA", Superoxide dismutase "SOD", and glutathione "GSH". The results showed that rats in group (2) with liver fibrosis had considerably higher levels of their serum AST, ALT, total bilirubin and MDA and were significantly lower in serum albumin, SOD, and GSH. On the other hand, treatment of the induced liver fibrosis with different doses of *D. salina* powder had a significant decline in the rat serum levels of AST, ALT, ALP, bilirubin, and MDA, as well as a significant rise in serum antioxidant SOD, GSH, and serum albumin. However, liver histological examination of rats with generated hepatic fibroses in groups (3, 4 & 5) revealed using *D. salina* at different doses can decrease liver injury, necrosis, and inflammatory cell infiltration. This was attributed to the presence of high levels of carotenoids (especially β -carotene) in *D. salina* which has protective activity opposed to TAA-induced hepatic fibrosis in rats.

Keywords: *D. salina*, liver, antioxidants, β -carotene, MDA, AST, ALT, SOD, GSH, histopathology.