

News & Comments

SPP May Be Acting as a Therapeutic Protective Agent against Liver Damage

Abir Hariz

Disordered metabolism and hyperglycaemia are two of the diabetes Mellitus (DM) main symptoms that damage the pancreas. Chronic hyperglycaemia causes various consequences, including failure, damage, and dysfunction of the kidneys, blood vessels, eyes, cardiovascular system, and nerves. DM aid in the generation of the free radical that also contributes to these difficulties. Additionally, it raises the chance of breast, colon, liver, pancreatic, and other cancers. In diabetic patients, the liver function indicators ALT and AST are consistently high and are linked to non-alcoholic fatty liver disease. About 70% of T2DM patients also have a common co-morbidity called non-alcoholic fatty liver. IL-6 is regarded as a key initiator of the acute stage of response and infection defence in liver tissue.

One such natural product that is taken as a whole food or as a food supplement by both humans and animals is spirulina platensis. In addition to minerals like selenium and chromium, it is rich in protein²⁰, antioxidants like phycocyanin and β -carotenoids, vital amino acids, ω -linolenic acid, and vitamins like C, A, E, and B-complex. The purpose of the current study was to shed light on SPP's potential application against liver damage and oxidative stress in diabetic rats.

In this study, only analytical-grade chemicals and solvents were employed. From the Egyptian Company of Biotechnology in Cairo, Egypt, kits for alanine transaminase (ALT), aspartate transaminase (AST), glucose, total cholesterol, triglyceride, alkaline phosphatase, and gamma-glutamyl transferase were obtained. There were 54 male Albino rats in all, ranging in weight from 150-190 g. Streptozotocin (STZ) freshly produced solution (45 mg kg⁻¹ b.wt.) in 100 mM citrate buffer was injected intraperitoneally into the animals to cause diabetes. After creating the diabetic model, 30 rats were split into 5 groups, each including 6 animals. Gamma-glutamyltransferase, alkaline phosphatase, total cholesterol, triglycerides, and the liver function markers AST and ALT in serum were all measured. The presentation of all data was generated through Mean \pm SEM.

As a good alternative source of beneficial chemicals for pharmaceuticals, spirulina has received increased attention. Recent studies have shown that spirulina provides several health advantages, including anti-inflammatory, immune-modulating, anti-viral, anti-microbial, and antioxidant properties. The findings indicate that liver function impairment is seen by increased serum levels of ALT and AST in diabetic groups when compared to a normal control group ($p < 0.05$). The findings demonstrate that cytokine levels (IL-6 and TNF α) were greater in the diabetes control group than in the normal control group. Hepatic lobule with normal histological structures can be seen in the liver of healthy control.



The antioxidative defence systems' antioxidant enzymes, such as SOD, GPX, and catalase, displayed decreased activity in several organ tissues during diabetes.

According to the findings, serum levels of AST, ALT, ALP, TG, TC, and MDA were decreased, whereas SOD, CAT, and GSH-Px were increased. In diabetic rats, the SPP also decreased IL-6 and TNF- α levels. The findings indicated that the use of SPP as a supplement may be considered a viable therapeutic molecule for the prevention or early treatment of diabetic diseases, even though its anti-diabetogenic effect needs more exploration.

JOURNAL REFERENCE

Gabr, G.A., S.M. El-Sayed, K.M. Alharthy, V.D. Seshadri and N.M.M. Hassan, 2022. Hepatoprotective effect of *Spirulina platensis* on liver functions of diabetic rats via TNF- α and IL-6 pathway. Int. J. Pharmacol., 18: 915-923.

KEYWORDS

Spirulina platensis, phenolic compounds, liver enzymes, diabetes, antioxidant

