

P 7. ROLE OF SPIRULINA PLATENSIS IN THE DETOXIFICATION OF FREE RADICALS AND GLUCOTOXICITY

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ABSTRACT: *Spirulina platensis* is free-flowing blue-green microalga. The organism as a whole as well as its extracts has been known to be highly nutritious and possess health-benefiting properties from combating against malnutrition to diabetes. The present research aims to explore such therapeutic properties of *S. platensis* extract using *in vitro* methods. Initially the biochemical and phytochemical properties of the aqueous extract of the organism were studied. DPPH assay was used to evaluate the free radical scavenging activity of the extract which exhibited the antioxidant potential of the organism. *S. platensis* extract could also inhibit the activity of α -amylase enzyme by 37.09%, thus, indicating its ability to control postprandial glucose levels. Diabetes leads to hyperglycemia which promotes the formation of Advanced Glycation End products (AGEs). Effectiveness of the *S. platensis* extract in prevention of glycation was determined using BSA as the protein and glucose as sugar. Reduction in protein aggregation was detected spectrophotometrically and by Congo Red assay. *S. platensis* extract caused reduction in formation of fructosamine by 9.84%, carbonyl content by 55.77% as determined by NBT assay and DNPH method respectively. The extract could effectively reduce browning of sugars by 22.67% which occurs due to Maillard reaction in the initial stages of glycation. Agarose gel electrophoresis method revealed the efficacy of *S. platensis* extract to prevent the stands breaks in plasmid pBR322 which occur as a result of glycoxidative DNA damage. Thus, this research proves that the consumption of *S. platensis* can provide health benefits such as antioxidant, antidiabetic, antiglycating and anti-tyrosinase effect along with nutrition.

Keywords: Antidiabetic, antiglycating, antioxidant, glycoxidative DNA damage, *Spirulina platensis*.

P 8. HEAVY METALS TOLERANCE BY S. PLATENSIS

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ABSTRACT: Excessive discharge of wastewater into natural water bodies cause water pollution, due to disturbed self-revival systems. Heavy metals in the sewage have affected the ecosystem to the extent that it is a detriment of humans, as it is difficult to eliminate them and instead, they accumulate in the organisms. Use of dry biomass of *Spirulina platensis* has proven to precipitate and biosorb heavy metals. This study aimed to check the tolerance of wet biomass of *S. platensis* to various heavy metals usually associated with wastewater. Preliminary experiments were conducted to standardise and optimise the growth conditions of *S. platensis*, in turn establishing a growth curve. Special emphasis was made on checking the tolerance of the microalgae to mercury [Hg(II)], for other organisms seldom grow in the presence of mercury.

Keywords: *Bioaccumulation, Spirulina platensis, Heavy Metal Toxicity, Mercury, Wastewater*