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Nutritional Profile, Antioxidative and Antihyperglycemic Properties of *Padina tetrastromatica* from Tioman Island, Malaysia

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Abstract: Seaweeds are an important ingredient of functional foods recommended for daily food, due to their unique compositions and nutritional value. *Padina tetrastromatica* is a brown edible seaweed that is commonly found along the coastal regions of Peninsular Malaysia and consumed as food by some coastal communities. This study investigates the nutritional and antihyperglycaemic potential of *P. tetrastromatica* extracts, which is generally accepted as an important functional food. In our methodology, we induced diabetes intraperitoneally in experimental animals with a dose of 65 mg kg^{-1} body weight of streptozotocin. Oral treatment with 200 and 400 mg kg^{-1} of *P. tetrastromatica* ethanolic and ethyl acetate extracts were initiated, respectively, to experimental rats once daily for 18 days. Metformin was used as the positive control. Biochemical estimations and histopathological analysis were included in this study. Treatment with *P. tetrastromatica* extracts significantly lowered the plasma glucose levels in Streptozotocin-induced diabetic rats. In addition, *P. tetrastromatica* extract treatment also showed a significant reduction in serum alanine transaminase levels. However, no significant changes were observed in serum aspartate transaminase levels. The ethyl acetate extract of *P. tetrastromatica* at 400 mg kg^{-1} dose shows some nephroprotective effect, which is observed from the significant increase in the plasma albumin levels. Histopathological evaluation revealed no marked morphological changes in tissues of the isolated organs of the ethyl acetate extract-treated group, revealing the safe nature of *P. tetrastromatica*.

Keywords: seaweed; brown algae; *Padina tetrastromatica*; Tioman Island; functional food; nutrition; antioxidant; antidiabetic; antihyperglycemic

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