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***In vitro* anti-inflammatory activity and acute toxicity of *Bohadschia vitiensis* water extract**

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Marine natural products exhibit a wide range of biological activities, which play an important role in drug discovery and therapy. Of all marine animals, marine invertebrates are considered as promising agents in producing such bioactive secondary metabolites. The sea cucumbers (Class Holothuroidea, Order Aspidochirotida), are abundantly distributed all over the world and reputed for producing bioactive compounds with therapeutic usage. The water extract of sea cucumbers is used to cure arthritic-related pains by many communities in Asia including Sri Lanka despite the scientific validation. Anti-inflammatory activity and acute toxicity of *Bohadschia vitiensis* water extract using *in vitro* models were investigated. *B. vitiensis* specimens were collected from Mannar, Sri Lanka and the water extract was prepared by following previously established methodologies. *In vitro* anti-inflammatory activity was evaluated for *B. vitiensis* water extract by means of egg albumin denaturation and hydrogen peroxide scavenging assays followed by calculation of IC₅₀ values. Each test was conducted in triplicates while Diclofenac sodium and ascorbic acid were used as standard reference drugs for egg albumin denaturation assay and hydrogen peroxide scavenging assay respectively. Acute toxicity of *B. vitiensis* water extract was determined by *Danio rerio* (zebra fish) acute toxicity assay and the LC₅₀ value was calculated. *B. vitiensis* water extract has more potent than (IC₅₀ = 277.51 µg/ml) the reference drug, Diclofenac sodium (IC₅₀ = 665.49 µg/ml) with respect to egg albumin denaturation assay. The inhibition of egg albumin denaturation by *B. vitiensis* water extracts was approximately three times higher than the reference drug. However, *B. vitiensis* water extract exhibited low level of hydrogen peroxide scavenging activity (IC₅₀ = 1908.11 µg/ml) than the reference drug, ascorbic acid (IC₅₀ = 378.26 µg/ml). As resulted by zebra fish acute toxicity assay, extract was moderately toxic with LC₅₀ of 151.59 µg/ml. The minimum acute toxicity was recorded related to the 50 µg/ml and 300 µg/ml resulted maximum acute toxicity of *B. vitiensis* water extract. The results of the present study specified that the water extract of *B. vitiensis* is a potent anti-inflammatory agent against protein denaturation while less potent against hydrogen peroxide radical scavenging activity. It is toxic on zebra fish embryo with a LC₅₀ of 151.59 µg/ml. Therefore, this pilot study for the first time report scientific evidences for anti-inflammatory activity and toxicity of *B. vitiensis* water extract, which is being used as a treatment for arthritis in folk medicines by Sri Lankan people. Further investigations using *in vivo* models are also recommended prior to the development of a therapeutic agent.

Keywords: *Bohadschia vitiensis*, *in vitro* assay, anti-inflammatory activity, zebra fish acute toxicity