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Anti-inflammatory Activity of Five Sri Lankan Marine Sponge Extracts; A Pilot Study**Silva P., Gunathilake V.***

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Abstract

Biological and chemical diversity of marine habitats provide a sizeable reservoir of novel bioactive compounds with therapeutic usage. Marine sponges (Porifera) are ranked at the top of hierarchy, with respect to the discovery of an array of bioactive compounds. We investigated anti-inflammatory activity of five marine sponge (Class Demospongiae) crude extracts, by in vitro protein denaturation and nitric oxide (NO) radical scavenging assay. Sponge material was collected from Dehiwala, Colombo (WL/3/2/14/17) and identified by morphology, skeleton and spicule analysis. The sponge crude extracts (SCEs) were prepared by methanol/dichloromethane extraction, followed by filtration and rotary evaporation. The zoo chemical analysis was carried out to investigate major chemical compounds present in SCEs. Concentrations of 100, 50, 25, 12.5 and 6.25 μgml^{-1} of SCEs were prepared by serial dilution. In vitro assays of egg albumin denaturation and Griess method were carried out to investigate the anti-inflammatory activity of the SCEs by means of protein denaturation and nitric oxide radical scavenging activity respectively while the percentage inhibition (IC 50) of each activity was calculated. The sponge species were identified as *Stylissa* sp. (SP1), *Stylissa cartettrri* (SP2), *Axinella* sp. (SP3), *Phakellia* sp. (SP4) and SP5 belongs to family Axinellidae. They contained alkaloids and terpenoids (SP3, SP4 & SP5), saponins (SP1 & SP4) and unsaturated sterols (SP3 & SP4). Three SCEs of SP2, SP3 and SP5 inhibited egg albumin denaturation with IC 50 value of 22.74, 3.98 and 63.67 μgml^{-1} respectively indicating anti-inflammatory activity. In each, IC50 values were lower than that of the standard reference drug (147.02 μgml^{-1}). The SCE of SP4 showed anti-inflammatory activity, yet was not dose dependent. The SCE of SP2 indicated nitric oxide radical scavenging activity with IC50 of 44.65 μgml^{-1} , which was more potent than the reference drug (126.07 μgml^{-1}). In toto, this pilot study prove that the tested crude extracts of five selected marine sponge species (*Stylissa* sp., *Stylissa carterri*, *Axinella* sp., *Phakellia* sp., and Family Axinellidae) possess in vitro anti-inflammatory properties with respect to egg albumin denaturation and Nitric Oxide radical scavenging activity. It further warrants the chemical characterization of these SCEs and a comprehensive study using in vivo and ex vivo models.

Keywords: Sri Lankan marine sponges, Anti-inflammatory activity, Protein denaturation, NO radical scavenging activity