ORIGINAL PAPERS | Published: 13 September 2022

Chemical Constituents and Anti-inflammatory Properties of the Marine Sponge *Haliclona cratera* from Konkan, India

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Russian Journal of Marine Biology **48**, 285–296 (2022)

Abstract

Fractionated compounds and methanol extract of the sponge *Haliclona cratera* (Schmidt, 1862) were investigated for their antioxidant and anti-inflammatory activities. The extract was also analyzed for its cytotoxicity in RAW macrophages by MTT assay. Enzyme-linked immunosorbent assay was performed to check the inflammatory mediators' levels (TNF-α, COX-2, IL-1β, PGE2, IL-6). High-performance liquid chromatography–mass spectrometry was used for characterization of fractionated compounds. The extracts showed good bovine serum albumin denaturation inhibition and poor antioxidant activity. It was also observed that the sponge extract did not show good cell viability

which indicated its cytotoxic nature. Hc_EA_2, Hc_$CHCl_3$_7, Hc_EA_5, and Hc_$CHCl_3$_6 showed best IL-1β and IL-6 inhibition in the range of 14.10–61.91%. Hc_EA_2, Hc_EA_5, Hc_$CHCl_3$_7 and Hc_$CHCl_3$_6 inhibited TNF-α levels at 74.78, 80.45, 74.16 and 81.29%, respectively. Fractionated compounds reduced the levels of IL-1β, IL-6, PGE2, TNF-α and NO considerably in rats subjected to carrageenan-induced inflammation. Three compounds were characterized as per MS data, namely Sphingosine with isopropyl terminus, 24-methyl-5~-cholesta-7,9(11),24(28) ~-trien-38-01 and 24-vinyl-cholest-9-ene-3β, 24-diol.

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ACKNOWLEDGMENTS

I express my gratitude to Mr. Shailendra Rane, Dr. Swapnaja Mohite, and Ms. Sayli Chaudhary for helping with analysis and sponge identification and to SVKM's NMIMS for all the support.

Funding

This work was financially supported by the Department of Biotechnology, Government of India (Project no. BT/PR12182/AAQ/3/696/2014).

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Ethics declarations

Conflict of interests. The authors declare that they have no conflict of interest.

Statement on the welfare of animals. All applicable international, national, and/or institutional guidelines for the care and use of animals were followed.

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Cite this article

Kumar, M.S. Chemical Constituents and Anti-inflammatory Properties of the Marine Sponge *Haliclona cratera* from

Konkan, India. *Russ J Mar Biol* **48**, 285–296 (2022).
https://doi.org/10.1134/S106307402204006X

Received	Revised	Accepted
28 June 2021	02 February 2022	24 March 2022

Published	Issue Date
13 September 2022	August 2022

DOI
https://doi.org/10.1134/S106307402204006X

Keywords:

sponge **chemical constituents** **bioactivities**

LC-MS/MS **inflammation**