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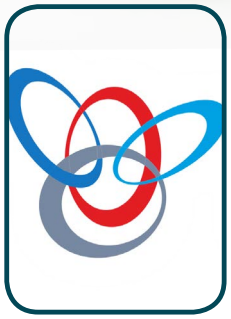

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Seasonal Variation in Antimicrobial Activity of Crude Extracts of Psammaplysilla sp. 1 from Phillips Reef, South Africa

Marine invertebrates constitute a diverse group of marine organisms beneficial to humanity due to their therapeutic significance. The marine sponge species Psammaplysilla sp. 1 was collected from Philips Reef, South Africa, over a four-season period and assayed for antimicrobial potential. The physicochemical parameters of the collection site were also recorded. The sponge crude extracts' antimicrobial activity was evaluated using an agar well diffusion assay against 5 pathogens. Phytochemical screening was conducted to identify the presence of 7 critical phytochemical groups. During the four seasons, the mean water temperature was 17.35°C ± 2.06, with autumn recording the highest (20°C) temperature. Antifungal activity was observed by Psammaplysilla sp. 1 (30 mm) against C. albicans, and this was higher than that showed by standard drugs ICZ-10 µg (15 ± 0.1 mm), FLU-15 µg (21 ± 0.2 mm), and VCZ-5 µg (17 ± 0.1 mm), respectively. Similar bioactivities were observed seasonally with Psammaplysilla sp. 1 (22 mm and 24 mm) during autumn and spring, respectively, against C. difficile while only crude extracts collected in spring showed bioactivity against C. albicans. Psammaplysilla sp. crude extracts showed broad-spectrum bioactivity against all test pathogens. DCM : ME crude extracts tested positive for the presence of 2/7 of the phytochemicals (terpenoids and flavonoids). GC-MS revealed several previously reported biologically active compounds such bicyclo[4.2.0]octa-1,3,5-trien-7-ol and phenol, 2,6-dibromo, some of which have been found in plants. This study revealed that sponge bioactivity is dependent on the season and further validated the antimicrobial potential of South African marine sponges.

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