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Isolation of cysteine-rich peptides from the deep-sea marine sponge *Stryphnus fortis* and determination of its antimicrobial effect

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Cysteine-rich peptides are a promising resource for a wide range of pharmacological applications such as development of drug leads and as scaffolds for potential oral drug delivery due to their stable disulfide framework. A handful of these compounds have been isolated from marine sponges and it is speculated that plenty of them remain unexplored. In the present study, four peptides A, B, C and D containing three disulfides were isolated from the aqueous extract of the deep-sea marine sponge *Stryphnus fortis* (Demospongiae, Tetractinellida, Ancorinidae) from Norway, and were further purified using RP-HPLC (Reverse Phase High Performance Liquid Chromatography). The mass spectroscopic analysis using MALDI-TOF (Matrix-Assisted Laser Desorption/Ionization- Time Of Flight) revealed monoisotopic masses of 3331.809 Da $[M+H]^+$, 3349.731 Da $[M+H]^+$, 3517.973 Da $[M+H]^+$, 3917.61 Da $[M+H]^+$respectively for the four peptides A, B, C and D. The antimicrobial activity was screened using a peptide adapted Micro dilution assay against *E. coli* (ATCC 25922), S. aureus (ATCC 29213) and *C. albicans* (ATCC 90028) up to a concentration of 50 μM. The average concentration derived from triplicates that exhibited a growth inhibition on visual inspection was considered as the Minimum Inhibitory Concentration (MIC). Moderate antimicrobial activity for peptide C was observed against *S. aureus* (MIC = 36.14 μM) and *C. albicans* (MIC = 18.07 μM). However, no inhibition was observed against *E. coli* up to the highest concentration tested. The human antimicrobial peptide LL 37 was used as the control (MIC value around 1-2 μM). The sequence analysis of the four peptides, their structural characterization and investigation of their potential applications are currently underway.

Keywords: Sponges, *Stryphnus fortis*, Antimicrobial activity, *Candida albicans*

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