

ANTIMICROBIAL ACTIVITY OF CARIBBEAN SPONGE EXTRACTS. *Memoirs of the Queensland Museum* 44: 438. 1999:- Marine sponges produce a diversity of unusual chemical compounds, but the ecological functions of these metabolites remain largely unknown. Organic extracts from 33 Caribbean sponges were assayed against a panel of 8 marine bacterial strains to determine if sponge secondary metabolites have ecologically significant antimicrobial effects. The test panel was comprised of an opportunistic pathogen (*Vibrio parahaemolyticus*), a common fouling bacterium (*Deleya marina*), and strains isolated from seawater and healthy and necrotic Caribbean sponges. Extracts were tested for antibiotic activity at concentrations that were volumetrically equivalent to those found in sponge tissues (i.e., whole-tissue concentrations). Bioassay results revealed that 16 species extracts (48% of those tested) exhibited antibiotic activity against at least one bacterial isolate and that the necrotic sponge isolates were the most sensitive test strains (inhibited by 40% of the extracts). Extracts from *Amphimedon compressa*, *Amphimedon erina*, *Aplysina lacunosa*, *Ptilocaulis spiculifera* and *Axinella corrugata* inhibited the largest numbers of test strains and exhibited the most potent antibiotic activities with values frequently exceeding that of the control antibiotic (Gentamicin). The pattern of antimicrobial activity was different for 15 of the 16

active species indicating that diverse taxa do not produce similar antibacterial metabolites. In total only 23% of the extracts/bacterial interactions tested generated antimicrobial activity indicating that conspicuous members of the Caribbean sponge community do not generally produce broad-spectrum antibacterial metabolites. All the extracts from species that exhibited antibacterial activity also deterred feeding by reef fish in a previous study, suggesting that some secondary metabolites may have evolved with multiple functions. Stevensine, a compound from *Axinella corrugata* known to deter feeding by predatory reef fishes, exhibited weak antibacterial activity, suggesting that this potent feeding deterrent is not solely responsible for the antimicrobial activity detected in the crude sponge extract. □ *Porifera*, antimicrobial, antibiotic, secondary metabolites, chemical defense, ecology.

Rochelle W. Newbold (email: rwnewbold@hotmail.com) & Joseph R. Pawlik, Biological Sciences and Center for Marine Science Research, University of North Carolina at Wilmington, Wilmington, North Carolina 28403-3297, USA; Paul Jensen & William Fenical, University of California, San Diego, Scripps Institution of Oceanography, La Jolla, California 92093-0236, USA; 1 June 1998.



Newbold, R. 1999. "Antimicrobial activity of Caribbean sponge extracts."
Memoirs of the Queensland Museum 44, 438–438.

View This Item Online: <https://www.biodiversitylibrary.org/item/124460>

Permalink: <https://www.biodiversitylibrary.org/partpdf/74785>

Holding Institution

Queensland Museum

Sponsored by

Atlas of Living Australia

Copyright & Reuse

Copyright Status: Permissions to digitize granted by rights holder.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.