

Antimicrobial Activity of *Bacillus* sp. Isolated from Tree Marine Sponges Species

Author(s) Giselle Kobata Kimura^{1,2}, Cristina Kampus Mantovani^{1,2}, Cláudia Beatriz Afonso de Menezes^{1,2}, João Kléber Novais Pereira¹, Fabiana Fantinatti-Garboggini¹

Institution(s) 1. DRM/CPQBA/UNICAMP, Microbial Resources Division / CPQBA, UNICAMP, CP 6171, Campinas, SP, CEP: 13081-970, Brazil 2. IB/UNICAMP, Instituto de Biologia / UNICAMP, Rua Monteiro Lobato, 255 - CEP 13083-970 - Campinas, SP-Brazil

Abstract:

Marine organisms represent a valuable source of new compounds. The biodiversity of the marine environment and the associated chemical diversity constitute a practically unlimited source of new active substances in the field of the development of bioactive products. Marine sponges are rich sources of structurally unique natural compounds, several of which have shown a wide variety of biological activities. They harbour a rich diversity of marine organisms in their tissues and there is increasing evidence that many metabolites are not produced by the marine animals themselves but by their associated bacteria. Although *Bacillus* is typically a terrestrial bacterium, it has previously been isolated from marine organisms such as soft corals, and marine sponges. The aim of this work was to investigate antimicrobial activity of twenty-nine *Bacillus* sp. strains isolated from marine sponges (*Axinella corrugate*, *Dragmacidon reticulate* and *Petronica citrine*) collected in Brazilian coast. The bacterial strains were characterized by conventional and molecular methods and assessed for their inhibitory activity against *Micrococcus luteus*, *Candida albicans* and *Pseudomonas aeruginosa* by agar disk diffusion method. Fourteen strains showed inhibitory activity against some of these microorganisms, among which seven showed high or moderated inhibition. The higher inhibitions were found on *Bacillus* sp. isolated from *Petronica citrine*. *Bacillus* is well known to produce metabolites with antimicrobial, antifungal and cytotoxic properties and the results of the present investigation revealed that the sponges associated *Bacillus* sp. were also found to be promising source of antibacterial bioactive substances. These promising results in vitro open the way for further investigations in order to purify and identify active molecules and determine the antimicrobial activity and toxicity in vivo of these products.

Financial support: FAPESP

Key words: Sponge, Antimicrobial Activity, *Bacillus*, Marine