5th BCNP Brazilian Conference on Natural Products
XXXI RESEM
Atibaia – SP – Brazil
ISBN: 978-85-66836-10-3
Oct. 26–29th 2015

ANTIMICROBIAL ACTIVITY OF MARINE ACTINOMYCETES AGAINST METHICILLIN-RESISTANT *S. AUREUS*

Claudia Schinke[1], Thamires Martins[1], Itamar Soares de Melo[2], Felix Guillermo Reyes Reyes[1]

[1]University of Campinas – UNICAMP, Campinas -SP, Brazil; [2]Embrapa Environment, Jaguariúna – SP, Brazil; claudia_schinke@yahoo.com.br

Abstract: Multi-drug resistance especially that of methicillin-resistant *Staphylococcus aureus* (MRSA) is generating an increased demand for novel antimicrobial agents. Marine bacteria are a rich and still unexplored source of structurally unique natural compounds, several of which have shown a wide variety of biological activities. We investigated the antimicrobial activity of metabolites produced by 20 marine actinomycetes against methicillin-resistant *S. aureus* (ATCC 43300). Actinomycetes, isolated from marine sponges collected from São Pedro and São Paulo islands, Brazil, were inoculated on glucose-yeast extract agar added of marine salts. Plates were incubated at room temperature at 20-23ºC for 30 days and then extracted with dichloromethane, followed by extraction with methanol. Dry crude extracts were re-dissolved in these solvents to a concentration of 132 mg mL^{-1} and 20 µL were applied to 6mm filter paper discs. Discs containing only methanol or dichloromethane were used as negative controls. After solvent evaporation, the dry discs were placed on Mueller-Hinton agar plates previously swab inoculated with the pathogen strain and incubated for 18h at 35 to 37ºC. Growth inhibition halos were measured around the discs. The assay was done in duplicate. Methanol crude extracts of five marine actinomycetes showed antimicrobial activity against multidrug-resistant *S. aureus*, with diameters of inhibition zones ranging from 8 to 9 mm. In contrast, no growth inhibition halos were observed around discs with dichloromethane crude extracts. Methanol soluble bioactive compounds from natural sources are hydrophilic, being usually intimately associated with lipophilic structures such as membranes [1]. Our results suggest that metabolites produced by marine actinomycetes show therapeutic potential against multidrug-resistant *S. aureus*.

References:

[1] Ghisalberti, E. L. 2008. Detection and isolation of bioactive natural products. In: Bioactive natural products: detection, isolation and structural determination (Colegate, S. M. and Molyneux, R. J., Eds), pp. 12-65. Taylor & Francis, Boca Raton, FL.