

Screening of Polyketide Synthase (PKS) and Nonribosomal Peptide Synthetase (NRPS) Genes of Culturable Bacteria Isolated from Tree Sponges Collected in Brazilian Coast.

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Abstract:

Diverse natural products with a wide range of bioactivities have been discovered from marine organisms, especially invertebrates, such as tunicates, bryozoans and sponges. Many researchers suggest that microbial symbionts are at least involved in the biosynthesis of metabolites of the host or are, in fact, the true origin of some metabolites. Nonribosomal peptide synthetases (NRPS) and polyketide synthases (PKS) are biosynthetic systems involved in the synthesis of a large number of important biologically active compounds produced by microorganisms. A total of 77 bacterial strains isolated from tree sponges (*Chelonaplysiela erecta*, *Dragmacidon reticulate* and *Petronica citrine*) collected in Brazilian coast were identified and screened for genes encoding polyketide synthases (PKS) and nonribosomal peptide synthetases (NRPS). The phylogenetic affiliation of the bacterial isolates was assessed by 16S rDNA-RFLP analysis and indicated a high diversity of genera from the sponges, including twelve different genera. Two genera, *Ruegeria* and *Pseudovibrio*, were the most abundant from the sponge *Chelonaplysiela erecta*, while the genera *Bacillus* was isolated from *Petronica citrine* and *Dragmacidon reticulate*. Nonribosomal peptide synthetase (NRPS) adenylation (A) domain and polyketide synthases (PKS) genes were investigated by amplification performed with degenerated primers. The amplification of the genes of PKS-I, PKS-II and NRPS were detected in 20, 41 and 19 isolates, respectively. Different combinations (presence or absence of the PKS I, PKS II and NRPS) in different isolates belonging to the same specie was observed. There is no doubt that NRPS, PKS-I and PKS-II PCR screening in different bacterial taxa may help in the identification of unexplored groups with unknown genetic potential for the production of interesting metabolites. **Financial Support:** FAPESP

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