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Diversity, bioactivity, and secondary metabolite profiles of bacteria isolated from different tissue of the mollusk gastropod *Truncatella* species

Malem Flores[1], **Mark Jeremiah Cleofas**[1], **Jortan Tun**[1], **Pamela David-Dobay**[2], **Joyce Ibana**[1] and **Gisela Concepcion**[1]
[1]University of the Philippines, Philippines
[2]Swiss Institute of Bioinformatics, Switzerland

The emergence of drug resistance for many diseases has been for decades the driving force behind the pursuit of naturally-occurring bioactive compounds. Among the candidate drug leads, marine sources are one of the most promising owing to the vast biodiversity of marine organisms. However, marine gastropods with shells are an overlooked source of bioactive secondary metabolites because they are well-protected by their shell covering and some produce venoms. In this study, several bacteria were isolated from different tissues of *Truncatella* sp., a small gastropod mollusk that is found on land very close to seawater (splash zone). Identification of each isolate using 16S sequence analysis revealed a diversity of Gram-negative and Gram-positive bacteria, with Actinobacteria as the dominating group. Furthermore, secondary metabolites produced by *Truncatella*-associated bacteria showed promising antimicrobial and anti-cancer properties. Some of these bioactive metabolites manifested narrow spectrum antimicrobial activity against *Staphylococcus aureus* or *Pseudomonas aeruginosa* while having weak inhibitory effect on lactic acid bacteria commensals. Likewise, there were extracts that exhibited selective cytotoxic activity on the lung cancer cell line, A549 or colorectal cancer cell, HCT 116 with moderate or no cytotoxicity on the normal kidney cell line, MDCK. Chemical profiles of secondary metabolites determined by reverse-phase high performance liquid chromatography (RP-HPLC) demonstrated common and unique patterns of metabolites for each isolate. This suggests that *Truncatella* is a potential source of bioactive metabolite-producing bacteria which can be valuable for drug discovery and that secondary metabolite profiles may present distinct phenotypic traits of the microorganisms. Importantly, this is the first study to report on the genetic and chemical profile diversity of bacteria associated with *Truncatella* and their corresponding antimicrobial and anticancer properties.

Biography

Malem Flores currently working at the Marine Science Institute, Velasquez St. University of the Philippines, Philippines.

malemflores@gmail.com

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