

Surviving Under Pollution Stress: Antibacterial and Antifungal Activities of the Oyster Species (*Magallana bilineata* and *Magallana cuttackensis*)

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Abstract

Antibiotic effectively controls the bacterial and fungal infections. Pathogens developing multi-drug resistance are a global health concern, which necessitate developing new molecules to overcome the resistance dilemma. This study explores the intrinsic ability of marine oysters synthesizing bioactive compounds. The tissue extracts prepared in n-hexane from two oysters, *Magallana bilineata* and *Magallana cuttackensis* compared for broad spectral antimicrobial activities against the fungal, Gram positive and negative pathogens. Regardless, both the species tolerated the same pollution indices; the *M. bilineata* exhibits stronger antimicrobial activities as compared to *M. cuttackensis*. *M. bilineata* potentially inhibited the bacterial growth with minimal inhibitory concentration (0.75 to 20 µg/ml) and fungal pathogens (0.75-5 µg /ml) as compared to ciprofloxacin and miconazole. Inhibitory potential complimented with reduce bactericidal and fungicidal concentrations required to observed susceptible zone of inhibition (ZOI). The inhibition augmented with increased antimicrobial index (AMI) and total activity index (TAI) against the human pathogen than those of *M. cuttackensis*. It is widely acknowledged that there is a need to develop novel antimicrobial agents to minimize the threat of emerging multiple antimicrobial resistant pathogens. Therefore, the oysters surviving in the pollution stress modulate the physiological and immune response may exploit to develop potential antibiotics.

Biography

Dr. Malik Wajid H. Chan has recently (March, 2021), completed his Ph.D from the Centre of Excellence in Marine Biology University of Karachi, Pakistan. He has published 6 articles, in international Esteemed journals. The four (out of six) have been published on the pollution stress and its effects on the local local community and fauna and flora. Some publications are in process. He has done a work on mangroves and oyster conservations in Pakistan. Dr. Chan is working on the effects of pollution stress on the metabolic rate and the biochemistry of the biota. Dr. Chan work based on the hypothesis; ""the organisms under high pollution stress have stronger antimicrobial activity than those, under less pollution stress".