Bactericidal Efficacy of Selected Medicinal Plant Crude Extracts and their Fractions against Common Fish Pathogens

By: Razak, RA; Sharifp, M; Yuso, FM; Ismail, IS

Abstract

The emergence of new diseases and the increased use of antibiotics have led to the development of resistant bacterial strains. Thus, there is greater attention to seek new antibacterial agents from the natural sources for combating fish diseases in the aquaculture industry. The present study evaluated the bactericidal efficacy of crude methanolic and aqueous extracts from Polygonum chinense, Syzygium polyanthum, Premna foetida, Pimenta dioica, Bruccia javanica, Vitex negundo, Alpinia conchigera and Clinacanthus nutans against Vibrio harveyi, Vibrio alginolyticus, Vibrio parahamolyticus and Aeromonas hydrophila using disc diffusion method. The results showed that methanolic extracts of P. dioica, P. foetida and P. chinense, and aqueous extracts of P. dioica and S. polyanthum showed moderate to strong activity (10.8 to 17.2 mm) against all the tested bacteria. These five potential crude extracts were fractionated using liquid-liquid extraction method to obtain the methanol, dichloromethane and ethyl acetate fractions. Among the fractions, ethyl acetate fraction showed the highest activity against all tested bacteria, with minimum inhibition concentration (MIC) values between 0.625 and 10.000 μg/mL. In addition, the five potential crude extracts had low to moderate toxicity with LC50 > 100 μg/mL using brine shrimp cytotoxicity assays. The results of this study indicated that methanolic extracts of P. chinense and P. foetida that showed high bactericidal activity and low toxicity could be good potentials for use in fish culture.

Keywords:
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Author Information

Reprint Address: Sharifp, M (reprint author)
Univ Putra Malaysia, Fac Vet Med, Upm Serdang 43400, Selangor Darul, Malaysia.

Reprint Address: Sharifp, M (reprint author)
Univ Putra Malaysia, Inst Biosci, Upm Serdang 43400, Selangor Darul, Malaysia.

Addresses:
1 Univ Putra Malaysia, Fac Vet Med, Upm Serdang 43400, Selangor Darul, Malaysia
2 Int Islamic Univ Malaysia, Kulliyah Sci, Jalan Sultan Ahmad Shah, Kuantan 25200, Pahang Darul Ma, Malaysia
3 Univ Putra Malaysia, Inst Biosci, Upm Serdang 43400, Selangor Darul, Malaysia

Email Addresses: psharif@gmail.com

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