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Bactericidal efficacy of selected medicinal plant crude extracts and their fractions against common fish pathogens (Article) (Open Access)

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Abstract

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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, Brucea javanica, Vitex negundo, Alpinia conchigera and Clinacanthus nutans against Vibrio harveyi, Vibrio alginolyticus, Vibrio parahaemolyticus 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 mg/mL. In addition, the five potential crude extracts had low to moderate toxicity with LC_{50} >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.

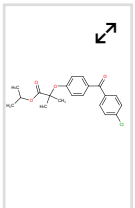
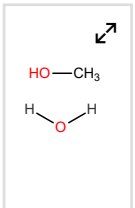
SciVal Topic Prominence

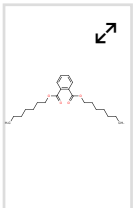
Topic: Seaweed | Sargassum | Methanolic extract

Prominence percentile: 86.530

Chemistry database information

Substances




Author keywords

Bactericidal activity | Brine shrimp toxicity | Disc diffusion | Medicinal plants | Minimum inhibition concentration

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GEOBASE Subject Index: antibiotic resistance | concentration (composition) | inhibition | medicinal plant | microbial activity | pathogen | toxicity

Species Index: Aeromonas hydrophila | Alpinia conchigera | Artemia | Bacteria (microorganisms) | Brucea javanica | Martes pennanti | Pimenta dioica | Polygonum chinense | Premna | Syzygium | Vibrio alginolyticus | Vibrio harveyi | Vibrio parahaemolyticus | Vitex negundo

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