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

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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*, *Brucja javanica*, *Vitex negundo*, *Alpinia conchigera* and *Clinacanthus nutans* against *Vibrio harveyi*, *Vibrio alginolyticus*, *Vibrio parahacmolyticus* 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 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

Author Keywords: Bactericidal activity; brine shrimp toxicity; disc diffusion; medicinal plants; minimum inhibition concentration

KeyWords Plus: GROWTH; POLYPHENOLS; AQUACULTURE; RESISTANCE; BIOASSAY; ENHANCE

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