

Antiparasitic potential of *Nephrolepis biserrata* methanol extract against the parasitic leech *Zeylanicobdella arugamensis* (Hirudinea) and LC-QTOF analysis

ABSTRACT

Marine leech *Zeylanicobdella arugamensis* (Piscicolidae), an economically important parasite is infesting predominantly cultured groupers, hybrid groupers and other fish in Southeast Asian countries. In this study, we tested the anti-parasitic potential of a medicinal plant *Nephrolepis biserrata* found in Sabah, East Malaysia against *Z. arugamensis*. Various concentrations of methanol extracts of the plant were tested experimentally against *Z. arugamensis* and disinfestation of the leech from its primary host hybrid groupers. The composition of methanol extract of *N. biserrata* was determined through LC-QTOF analysis. The significant anti-parasitic activity of 100% mortality of leeches was observed with the exposure of *N. biserrata* extracts. The average time to kill the leeches at concentrations of 25, 50 and 100 mg/ml was 25.11 ± 3.26 , 11.91 ± 0.99 , and 4.88 ± 0.50 min., respectively. Further, at various low concentrations of *N. biserrata* 2.5, 5 and 10 mg/ml, hybrid groupers were disinfested in an average time of 108.33 ± 12.65 , 65.83 ± 9.70 and 29.16 ± 5.85 min., respectively. The tandem mass spectrometry data from LC-QTOF indicated some hits on useful bioactive compounds such as terpenoids (ivalin, isovelleral, brassinolide, and eschscholtzanthin), flavonoids (alnustin, kaempferol 7,4'-dimethyl ether, and pachypodol), phenolics (piscidic acid, chlorogenic acid, and ankorine), and aromatic (3-hydroxycoumarin). Thus *N. biserrata* can act as a potential biocontrol agent.