

Antiparasitic potential of chromatographic fractions of *nephrolepis biserrata* and liquid chromatography-quadrupole time-of-flight-mass spectrometry analysis

ABSTRACT

Marine aquaculture development is recently impeded by parasitic leech *Zeylanicobdella arugamensis* (Hirudinea, Piscicolidae) in Sabah, Malaysia. The parasitic leech infests a variety of cultured fishes in aquaculture facilities. In this study, we evaluated the antiparasitic activity of the chromatographic fractions of the medicinal plant *Nephrolepis biserrata* methanol extract against *Z. arugamensis* and highlighted the potential metabolites responsible for the antiparasitic properties through liquid chromatography (LC)–quadrupole time-of-flight (QTOF)–mass spectrometry (MS) analysis. Out of seven fractions obtained through flash column chromatography techniques, three fractions demonstrated antiparasitic properties. Significant parasitic mortality was indicated by fraction 3 at a concentration of 2.50 mg/mL, all the leeches were killed in a time limit of 1.92 ± 0.59 min. followed by fraction 4 (14 mg/mL) in 34.57 ± 3.39 and fraction 5 (15.3 mg/mL) in 36.82 ± 4.53 min. LC-QTOF-MS analysis indicated the presence of secondary metabolites including phytosphingosine (6), pyrethrosin (1), haplophytine (9), ivalin (2), warburganal (3), isodomedin (4) and pheophorbide a (16), representing sphingoid, alkaloid, terpenoid, phenolic and flavonoid groups. Thus, our study indicated that the chromatographic fractions of *N. biserrata* demonstrated significant antiparasitic activity against the marine parasitic leeches due to the presence of potent antiparasitic bioactive compounds.