

Antibacterial and antioxidant activities of *Homalomena josefii* P.C. Boyce and S.Y. Wong rhizome extract

ABSTRACT

The rhizome of *Homalomena josefii* P.C. Boyce and S.Y. Wong is commonly used in Borneo folk medicine. It is potent in treating stomach aches, headaches, and snake bites. The lack of information about their biological activities leads to an investigation to determine its antibacterial and antioxidant activities of *H. josefii* rhizome extract. This study aimed to ascertain antibacterial activity in opposition to foodborne pathogens namely *Bacillus megaterium* ATCC14581, *Bacillus pumilus* ATCC14884, *Proteus mirabilis* ATCC21100 and *Klebsiella pneumoniae* ATCC13773 and its antioxidant properties of *H. josefii* rhizome extracts. Extraction of dried powdered *H. josefii* rhizome was carried out through the maceration method using methanol as a solvent to produce crude extracts. The crude extracts were then tested for antibacterial and antioxidant activities. The antibacterial activity was conducted in terms of disc diffusion assay (DDA), minimum inhibitory concentration (MIC), minimum bactericidal concentration (MBC) and time-kill assay. All were performed following the Clinical and Laboratory Standard Institute (CLSI) procedure to ensure liable results. Total phenolic compounds (TPC) and 2,2-diphenyl-1-picryl-hydrazyl-hydrate (DPPH) scavenging assay were used to stimulate the antioxidant activity. The results show that DDA inhibition zone of the methanolic extracts ranged from 9.00 ± 0.58 to 10.00 ± 0.00 mm. The extract was able to inhibit the growth of all tested bacteria with MICs value ranging from 0.31 to 5.00 mg/mL. Meanwhile, the extract is able to kill all tested bacteria with MBC values that range from 0.63 to 5.00 mg/mL. Time-kill assay curve analysis results showed that the extract was able to completely kill the bacterial growth at $4 \times$ MIC for 4 hours. The total phenolic compound (TPC) of methanolic extract was 435.138 mg GAE/g and IC₅₀ of the extract was 11.809 μ g/mL. In conclusion, the methanolic extract of *H. josefii* rhizome extract exhibited antibacterial and antioxidant activities, thus it can further be developed as a natural preservative.

Keyword: Antibacterial activity, Antioxidant activity; Foodborne pathogens; *Homalomena josefii*