

Antibacterial and sporicidal activity of *Eugenia polyantha* Wight against *Bacillus cereus* and *Bacillus subtilis*

ABSTRACT

The spore-forming bacteria, *Bacillus* spp., have often been associated with the contamination of rice and other starchy products. In this study, the extract of Indonesian bay leaf (*Eugenia polyantha*) was assessed for its antibacterial and sporicidal activities against vegetative cells and spores of *Bacillus cereus* ATCC33019 as well as *Bacillus subtilis* ATCC6633. The Minimum Inhibitory Concentration of *E. polyantha* extract against vegetative cells of *B. cereus* and *B. subtilis* were 0.31 and 0.63 mg/mL, respectively, while both their Minimum Bactericidal Concentration were 2.50 mg/mL. Time kill curves demonstrated that the bactericidal endpoint for *B. cereus* and *B. subtilis* was reached at concentration of 2.50 and 5.00 mg/mL, respectively (8× MIC) after 4 h of incubation. *E. polyantha* extract inactivated more than 3-log (99.99%) of *B. cereus* and *B. subtilis* spores at a concentration of 10.00 mg/mL (1.0%) after 1 h of incubation and the spores was completely killed at 25.00 mg/mL (2.5%). The sporicidal activity of *E. polyantha* extract was not affected by different temperatures treatment and alteration of pH. In conclusion, the potential anti-Bacillus activities of *E. polyantha* extract might support its use as a natural food preservative.

Keyword: Antibacterial; Sporicidal; *Bacillus*; *Eugenia polyantha*; Food preservative