

**Antibacterial and sporicidal activities of *Syzygium polyanthum* L.
extract against *Bacillus cereus* isolated from rice**

ABSTRACT

Spore-forming bacteria, *Bacillus* sp., frequently been associated with the contamination of rice and other starchy products. Spores are more resistant to antimicrobial treatments than its vegetative cells. The extract of Indonesian bay leaf (*Syzygium polyanthum* L.) was assessed for its antibacterial and sporicidal activities against vegetative cells and spores of *B. cereus* isolated from rice (25 strains). The results showed that *S. polyanthum* L. extract was able to inhibit the growth of vegetative cells of all *B. cereus* isolates with MICs ranged from 0.16 to 0.63 mg/mL and can kill with MBCs ranged from 0.31 to 2.50 mg/mL. The bactericidal endpoint for *B. cereus* BC-NP.8 in time kill curve was at 1.25 mg/mL (8× MIC) after 4 h of incubation while for *B. cereus* ATCC 33019 was at 2.50 mg/mL (8× MIC). The sporicidal activity of *S. polyanthum* L. extract was not affected by different temperatures treatment and alteration of the pHs of extract. Therefore, this indicates that the extract was stable after exposed to pH3, 7 and 10 as well as temperature of 50, 80, and 121°C. Observation under on scanning electron microscope the structure of the *B. cereus* ATCC 33019 spores was ruptured after being treated with 1% (w/v) *S. polyanthum* L. extract for 1 h. In conclusion, *S. polyanthum* L. extract had antibacterial and sporicidal activity against vegetative cells and spores of *B. cereus* isolated from rice.

Keyword: Antibacterial; *B. cereus*; Rice; Sporicidal; *Syzygium polyanthum* L.