ABSTRACT

Verania Nugroho (03420070049)

ANTIMICROBIAL ACTIVITY OF RED BEET (*Beta vulgaris* L.)

(xv + 113 pages: 12 tables, 19 pictures, 23 appendixes)

Red beet has a function as antioxidant, natural colorants and antimicrobial. Red beet extract can also inhibit the growth of harmful human pathogens such as *Staphylococcus aureus* and *Escherichia coli*. In this research, red beet extracts by varying from a combination solvent of ethanol with ethyl acetate (100:0, 80:20, 60:40, 40:60, 20:80, 0:100), maceration temperature (25°C and 40°C), and maceration time (1, 2, 3, 4, 5, 6 hours). Extract using ethanol solvent at a temperature of 25°C for 6 hours resulted the best inhibition diameter in bacteria. However, it could not inhibit mold. Antimicrobial activity identified qualitatively containing tannin, flavonoid, saponin, and triterpenoid. The result of Response Surface Methodology (RSM) did not give the best inhibition. Extract was difficult to inhibit the spores of *B. cereus* because of the complex structure. The damage of cell wall eases the extract to inhibit *S. aureus*, *B. cereus*, *Pseudomonas* sp, and *E. coli*. The chosen extract has similar result to *Penicillin G* and Streptomisin 100 ppm. Extract can leakage calcium and potassium of *S. aureus* (48,46 mg/L and 605,70 mg/L), *B. cereus* (49,74 mg/L and 545,57 mg/L), *Pseudomonas* sp (51,20 mg/L and 477,41 mg/L), and *E. coli* (54,71 mg/L). The leakages of ion cause damage to the bacteria cell were tested as a wrinkle and rough surfaces which can be observed by Scanning Electron Microscope (SEM).

Key words: red beet, antimicrobial, extraction, extract, inhibition diameter

References: 72 (1991-2010)