ABSTRACT

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EXTRACTION ANALYSIS OF COFFEE ARABICA (Coffea arabica L.)
SKIN AND BEANS AS ANTIMICROBIAL AGENT
(xvi + 130 pages : 5 tables, 20 pictures, 16 appendixes)

Extracts of green coffee and red colored skin coffee were tested for its antimicrobial activity against five microorganisms, B. cereus, S. aureus, E. coli, S. Typhi, and A. flavus using agar diffusion method. In this research, green coffee and coffee skin were extracted using ambient maceration and heat maceration method. The solvents used in this research were ethanol, ethyl acetate, and hexane. The extracts were diluted to different concentrations, which were 5%, 10%, 15%, 20%, and 25%. The result showed that green coffee extract could not inhibit all the tested microbes. Coffee skin extract could inhibit Gram positive bacteria but could not inhibit Gram negative bacteria and mold. The selected extract which have the optimum antimicrobial activity is ethanolic extract of coffee skin which is extracted using heat maceration method at 5% concentration. The result showed that ethanolic extract inhibited B. cereus (7,03-14.34 mm) and S. aureus (6,98-13,83 mm) with MIC and MBC values for B. cereus and S. aureus were 0,95%, 3,80% and 0,90%, 3,60%. The active compounds found in ethanolic extract are alkaloid, saponin, tannin, phenolic, flavonoid, triterpenoid, steroid, and glycoside. Total phenolic compounds of extract was 103,58 mg GA/gram and extract has a low toxic potential. The results also indicate that sugar addition could decrease the antimicrobial activity and the selected extract was heat stable. The selected extract showed comparable potential to Penicillin G and Streptomycin at 10 ppm and 50 ppm concentration. The SEM observation confirmed that selected extract caused cell wall deformation. The GC-MS analysis results showed that compounds found in coffee skin extract were trimethylxanthine, cis-cis Linoleic acid, vitamin E, campesterol, and theobromine.

Keywords : green coffee, coffee skin, Coffea arabica, antimicrobial activity, agar well diffusion method, heat, antibiotics, sugar.