Potensi Ekstrak Daun Moringa oleifera Lamk. sebagai Antibakteri Staphylococcus aureus = The Potential of Moringa oleifera Lamk. Leaves Extract as an Antibacterial Agent for Staphylococcus aureus

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Abstrak

Peningkatan insidensi infeksi S. aureus melatarbelakangi peningkatan penggunaan antibiotik yang melawan S. aureus, sehingga kejadian resistensi antibiotik semakin meningkat. Ekstrak tanaman M. oleifera Lamk. telah diteliti di berbagai negara dan didapatkan hasil berupa efek antibakteri terhadap S. aureus. Penelitian ini bertujuan mengetahui efek antibakteri ekstrak daun M. oleifera Lamk. terhadap bakteri S. aureus. Penelitian dikerjakan di laboratorium Departemen Mikrobiologi FKUI dengan rancangan eksperimental dan menggunakan metode makrodilusi tabung. Konsentrasi ekstrak yang diuji efek antibakterinya adalah 3.200 mg/mL, 1.600 mg/mL, 800 mg/mL, 400 mg/mL, dan 200 mg/mL. Selain kelompok uji, juga terdapat 6 kelompok kontrol, yaitu brain heart infusion (BHI); BHI dan bakteri; BHI, dimethyl sulfoxide (DMSO), dan bakteri; BHI dan esktrak; eritromisin; dan eritromisin dan bakteri. Hasil pertumbuhan bakteri setiap tabung dinilai sebagai Konsentrasi Hambat Minimum (KHM) dan pertumbuhan pada agar nutrisi dinilai sebagai Konsentrasi Bunuh Minimum (KBM). Setiap konsentrasi juga dihitung jumlah koloni yang tumbuh pada plate count agar (PCA) menggunakan colony counter. Percobaan dilakukan dengan enam kali pengulangan. Ekstrak daun M. oleifera Lamk. memiliki KHM 800 mg/mL dan KBM pada konsentrasi1.600 mg/mL terhadap S. aureus. Jumlah koloni bakteri pada KHM dari pengamatan PCA adalah 55,83±10,685 (rerata±SD) dan pada KBM adalah steril (0 CFU/mL). Hasil uji ANOVA dan Post Hoc Bonferroni adalah terdapat perbedaan bermakna ($p<0,05$) baik antarkelompok uji maupun antara kelompok uji dan kontrol, sementara tidak terdapat perbedaan bermakna ($p>0,05$) antarkelompok kontrol positif. Dapat disimpulkan bahwa ekstrak daun M. oleifera Lamk. memiliki potensi antibakteri terhadap S. aureus.

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The increasing incidence of S. aureus infection is the background for the increasing use of antibiotics against S. aureus, so the occurrence of antibiotic resistance is increasing. M. oleifera Lamk. plant extract has been studied in several countries and the results revealed that there was an antibacterial effect againsts S. aureus. The aim of this research is to discover antibacterial effect of M. oleifera Lamk. leaves extract against S. aureus bacteria. Research conducted at Microbiology Department Laboratory of FKUI with an experimental study design and using tube macrodilution method. The extract concentrations tested for its antibacterial effect were 3.200 mg/mL, 1.600 mg/mL, 800 mg/mL, 400 mg/mL, and 200 mg/mL. There were also six control groups, i.e. brain heart infusion (BHI); BHI and bacteria; BHI, dimethyl sulfoxide (DMSO), and bacteria; BHI and extract; erythromycin; and erythromycin and bacteria. Result of bacterial growth of each tube was determined as Minimum Inhibitory Concentration (MIC) and on nutrient agar was determined as Minimum Bactericidal Concentration (MBC). Each concentration also planted on plate count agar (PCA), so the number of colonies were counted using colony counter. The experiment was repeated six times. The result revealed that MIC and MBC of M. oleifera leaves extract against S. aureus are 800 mg/mL and 1.600 mg/mL. The number of bacterial colonies of MIC through PCA observation was 55,83±10,685 (mean±SD) and on MBC was sterile. According to One-way ANOVA and Post Hoc Bonferroni test, there were

statistical difference ($p<0,05$) between test and control groups, and between test groups, while there were no statistical difference between control groups itself. This research conclude that M. oleifera Lamk. leaves extract has an antibacterial effect against S. aureus.