Efek Ekstrak Etanol Temulawak (Curcuma xanthorrhiza Roxb.) Terhadap Fase Awal, Menengah, dan Maturasi Perkembangan Biofilm Candida albicans Isolat Klinis = Javanese Turmeric Ethanol Extract (Curcuma xanthorrhiza Roxb.) Effect on Early, Intermediate, and Maturation Phase of Clinical Isolate of Candida albicans' Biofilm Development

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Abstrak

Latar belakang: Temulawak yang mengandung xanthorrhizol diketahui memiliki efek antijamur. Xanthorrhizol dilaporkan mampu mengeradikasi biofilm Candida albicans.
Tujuan: Menganalisis korelasi antara efek hambat ekstrak etanol temulawak EET dengan perkembangan biofilm C. albicans isolat klinis pada berbagai fase, serta mengamati gambaran mikroskopis biofilm C. albicans.
Metode: Uji MTT digunakan untuk menguji viabilitas C. albicans pada biofilm dan dikonversikan persen hambat ekstrak etanol temulawak KHBM50 . Efek EET terhadap gambaran mikroskopis setiap fase perkembangan biofilm C. albicans diamati dengan Scanning Electron Microscopy.
Hasil: Nilai Konsentrasi Hambat Biofilm Minimal KHBM50 EET terhadap biofilm C. albicans isolat klinis pada fase awal, menengah, dan maturasi secara berturut-turut adalah 20 , 30 , dan 35 . Gambaran mikroskopis pada setiap fase perkembangan biofilm C. albicans terlihat penurunan jumlah sel dan densitas C. albicans, serta terhambatnya pembentukan filamen dibandingkan dengan kelompok tanpa perlakuan.
Kesimpulan: EET mampu menghambat perkembangan fase awal, menengah, dan maturasi biofilm C. albicans isolat klinis. Semakin matur fase perkembangan biofilm, C. albicans akan semakin resisten terhadap ekstrak temulawak. Paparan ekstrak temulawak memengaruhi kemampuan C. albicans isolat klinis dalam membentuk filamen serta menurunkan jumlah sel dan densitas biofilm.
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Background: Javanese turmeric which contains xanthorrhizol is known to have antifungal effect. Xanthorrhizol is reported to be able to eradicate Candida albicans' biofilm formation.
Objective: Analyze the correlation between inhibition concentration of Javanese turmeric ethanol extract JTEE and each development phase of C. albicans' biofilm, and observing microscopic appearance of each phase of C. albicans biofilm.
Method: MTT assay was used to test the viability of C. albicans towards biofilm and converted to Minimum Biofilm Inhibitory Concentration MBIC50 . JTEE' s effect on each phase of microscopic appearance of C. albicans' biofilm is observed by Scanning Electron Microscopy.
Result: MBIC50 of JTEE towards development of clinical isolate of C. albicans' biofilm in the early adhesion and proliferation , intermediate, and maturation phase as follows 20, 30, and 35 respectively. The microscopic appearance on each phase of C. albicans' biofilm development shows decrease in cell number and density, as well as inhibiton of filament formation compared with control group.
Conclusion: JTEE can inhibit the development phases of C. albicans' biofilm. The potency of JTEE to inhibit development of C. albicans' biofilm was decreased along with the maturation of biofilm. The JTEE' s

exposure leads to changes of microscopic appearance of C. albicans' biofilm development.