Efek in vitro ekstrak etanol temulawak (curcuma xanthorrhiza roxb.) dalam menghambat biofilm candida albicans fase maturasi = In vitro effect of javanese tumeric (curcuma xanthorrhiza roxb.) ethanol extract in inhibiting of candida albicans biofilm on maturation phase

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Abstrak

Latar belakang: Temulawak adalah tanaman obat asli Indonesia yang mengandung zat aktif xanthorrhizol dan memiliki efek antifungal. Dengan membentuk biofilm, Candida albicans menjadi virulen dan semakin virulen ketika mencapai fase maturasi.
Tujuan: Mengetahui potensi ekstrak etanol temulawak dalam menghambat biofilm C. albicans isolat klinis dan C. albicans ATCC 10231 pada fase maturasi.
Metode: Pemaparan ekstrak etanol temulawak berbagai konsentrasi pada biofilm C. albicans dimulai pada 1.5 jam setelah inkubasi dan dilanjutkan selama 48 jam. MTT assay digunakan untuk mengukur persentase viabilitas sel C. albicans pada biofilm yang kemudian dikonversi menjadi persentase inhibisi biofilm oleh ekstrak temulawak.
Hasil: Terhadap C. albicans isolat klinis, Kadar Hambat Minimum KHM dan Kadar Bunuh Minimum KBM ekstrak etanol temulawak adalah 15 dan 30, sedangkan terhadap C. albicans ATCC 10231 adalah 20 dan 35. Nilai Kadar Hambat Biofilm Minimum KHBM50 ekstrak etanol temulawak adalah 35 terhadap C. albican isolat klinis dan 40 terhadap C. albicans ATCC 10231. Dibutuhkan konsentrasi ekstrak etanol temulawak yang lebih tinggi untuk menghambat C. albicans ATCC 10231 daripada untuk menghambat C. albicans isolat klinis.
Kesimpulan: Baik terhadap C. albicans isolat klinis maupun C. albicans ATCC 10231, ekstrak etanol temulawak berpotensi menghambat biofilm C. albicans fase maturasi.
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Background: Javanese turmeric is an Indonesian medicinal plant which contains xanthorrhizol had been reported to have antifungal effect. By forming biofilms, C. albicans becomes virulent and more virulent as it reaches the maturation phase.
Objective: To investigate the capability of Javanese turmeric ethanol extract in inhibiting the formation of maturation phase C. albicans biofilm both of clinical isolate and ATCC 10231.
Methods: The Exposure of various concentrations of Javanese turmeric ethanol extract to C. albicans biofilm started at 1.5 hours after incubation and continued for 48 hours. MTT assay was used to measure the percentage viability of C. albicans cells on the biofilm which was then converted into the percentage of biofilm inhibition.
Results: Against C. albicans clinical isolate, Minimum Inhibition Concentration MIC and Minimum Fungicidal Concentration MFC of javanese turmeric ethanol extract was 15 and 30 whereas against C. albicans ATCC 10231 was 20 and 35. Minimum Biofilm Inhibition Concentration MBIC50 of javanese turmeric ethanol extract was 35 against C. albicans clinical isolate and 40 against C. albicans ATCC 10231 biofilm. Higher concentration of the extract was required to inhibit C. albicans ATCC 10231 compared to the concentration to inhibit C. albicans clinical isolate.

Conclusion: Both against C. albicans clinical isolat and C. albicans ATCC 10231, javanese turmeric ethanol extract has potential in inhibiting mature phase of C. albicans biofilm.