

Efek antibakteri ekstrak etanol temulawak terhadap dual species streptococcus mutans dan streptococcus sanguinis (in vitro) =
Antibacterial effect of java tumeric ethanol extract against dual species streptococcus mutans and streptococcus sanguinis (in vitro)

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Abstrak

Latar belakang: Kadar Bunuh Minimal (KBM) ekstrak etanol temulawak (*Curcuma xanthorrhiza* Roxb.) terhadap *Streptococcus mutans* 25% dan 15% terhadap *Streptococcus sanguinis* single species (in vitro). *Streptococcus mutans* dan *Streptococcus sanguinis* saling berkompetisi untuk memperoleh nutrisi.

Tujuan: Menganalisis efek antibakteri ekstrak etanol temulawak terhadap dual species *Streptococcus* in vitro.

Metode: Uji antibakteri dengan metode perhitungan koloni dan kuantifikasi dengan Real-time PCR. Analisis data menggunakan Kruskal Wallis, Mann-Whitney dan Unpaired T-test.

Hasil: KHM ekstrak etanol temulawak terhadap dual species *Streptococcus* 0,2% dan KBM 10%. Di dalam biofilm dual species *Streptococcus*, proporsi *S.mutans* lebih tinggi daripada *S. sanguinis* ($p < 0.05$).

Simpulan: Konsentrasi efektif ekstrak etanol temulawak sebagai antibakteri terhadap *S.mutans* dan *S.sanguinis* dalam dual species lebih rendah dari pada terhadap kedua bakteri tersebut sebagai single species. Di dalam biofilm dual species, *S. sanguinis* lebih sensitif terhadap ekstrak temulawak daripada *S.mutans*.

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Background: Minimal Bactericidal Concentration (MBC) of Java turmeric (*Curcuma xanthorrhiza* Roxb.) ethanol extract against *Streptococcus mutans* is 25% and 15% against *Streptococcus sanguinis*. In dental biofilm *S.mutans* and *S.sanguinis* competes each other to obtain nutrients.

Objectives: Analyze the antibacterial effect of Java tumeric ethanol extract (MIC and MBC) against dual species *Streptococcus* in vitro.

Methods: Antibacteria activity of the extract was analyzed by measuring the growth of the bacteria after being exposed to the extract by counting colony formation and by quantifying the existing bacterial cell number using real-time PCR. Statistic analysis using Kruskal Wallis, Mann Whitney test and Unpaired t-test.

Results: The MIC of the extract was 0,2% and the MBC was 10%. After exposure of the extract to the dual species biofilm, the growth of *S.mutans* was higher than *S.sanguinis* ($p < 0,05$).

Conclutions: Java tumeric ethanol extract is more effective against *S.mutans* and *S.sanguinis* as dual species *Streptococcus* than as single species. *S.sanguinis* is more sensitive to Java tumeric ethanol extract than *S.mutans*.