Potensi Ekstrak Etanol Dan Fraksi-Fraksi Kulit Buah Citrus Aurantifolia Sebagai Antibakteri Enteroccocus Faecalis Serta Keamanannya = The Potentcy of Ethanol Extract and Citrus aurantifolia fruit peel Fractions as Antibacterial for Enterococcus faecalis and its Safety

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Abstrak

Latar Belakang: Enterococcus faecalis adalah bakteri yang sering ditemukan pada infeksi endodontik sekunder pada pasca perawatan saluran akar. Beberapa tanaman berkhasiat obat telah diteliti dan dikembangkan kearah obat herbal terstandar untuk digunakan dalam bidang kedokteran gigi sebagai antibakteri, salah satu diantaranya adalah kulit buah C. aurantifolia. Tujuan: Menetapkan potensi ekstrak etanol dan fraksi-fraksi kulit buah C. aurantifolia sebagai anti bakteri E. faecalis serta keamanannya. Metode: Kulit buah C. aurantifolia diekstraksi dengan pelarut etanol, lalu di fraksinasi dengan pelarut n-heksana, kloroform,etil asetat. Enterococcus faecalis isolat klinik dan ATCC 29212 digunakan sebagai bakteri uji. Identifikasi kelompok senyawa kimia berdasarkan uji fitokimia dan komponen kimia ekstrak etanol dan fraksi-fraksi kulit buah C. aurantifolia berdasarkan uji GC-MS. Selanjutnya daya hambat terhadap pertumbuhan bakteri E. faecalis diuji berdasarkan zona hambat dengan metode difusi cakram. Bahan antibakteri kulit buah C. aueantifolia terbaik, di uji sitotoksisitas terhadap sel fibroblas dan sel osteoblas menggunakan uji MTT. Uji pembentukan massa biofilm E. faecalis dengan metode crystal violet dan uji viabilitas E. faecalis pada massa biofilm dan kondisi planktonik dengan metode total plate count. Hasil penelitian: Kelompok senyawa kimia dan komponen kimia dari ekstrak etanol dan fraksi-fraksi kulit buah C. aurantifolia teridentifikasi. Ekstrak etanol kulit buah C. aurantifolia menunjukkan zona hambat, tidak toksik terhadap sel fibroblas dan osteoblas, menghambat pembentukan massa biofilm E. faecalis isolat klinik dan E. faecalis ATCC 29212 serta dapat menurunkan viabilitas E. faecalis pada massa biofilm dan kondisi planktonik. Kesimpulan: Ekstrak etanol kulit buah C aurantifolia teridentifikasi berdasarkan kelompok senyawa kimia dan komponan kimianya serta memiliki potensi sebagai antibakteri dan antibiofilm terhadap E. faecalis serta tidak menimbulkan efek toksik terhadap sel mamalia.
.....Background: Enterococcus faecalis is a bacterium that commonly found in secondary infections of post-endodontic treatment. Several medicinal plants have been studied as standardized herbal medicines for dentistry as an antibacterial agent, such as C. aurantifolia peel fruit. Objectives: To determine the potency of ethanol extract and C. aurantifolia fruit peel fractions as an antibacterial for E. faecalis and its biological safety. Method: C. aurantifolia fruit peels were extracted with ethanol, then fractionated with n-hexane, chloroform, ethyl acetate. The E. faecalis used was clinical isolate and E. faecalis ATCC 29212. Identification component of chemical compounds based on phytochemical tests and chemical components of ethanol extract and fruit peel fractions of C. aurantifolia based on GC-MS test. The growth inhibition towards E. faecalis was tested by evaluating the inhibition zone using the disc diffusion test. The growth inhibition towards E. faecalis was tested by evaluating the inhibition zone using the disc diffusion test. The best antibacterial agent of C. aueantifolia fruit peel was tested for cytotoxicity against fibroblasts and osteoblasts using the MTT assay. Furthermore, biofilm mass formation of E. faecalis, bacterial viability in

biofilm mass as well as planktonic conditioned were evaluated by a crystal violet staining and total plate count, respectively. Results: Active compounds and chemical components of ethanol extracts and C. aurantifolia peel fruit fractions were identified. The ethanol extract of C. aurantifolia peel fruit showed an anti bacterial in either E. faecalis strain tested and showed non-toxic to fibroblast and osteoblast cells. Conclusion: Ethanol extract of C. aurantifolia peel has a promising potential ability as an antibacterial against E. faecalis and is non-toxic to mammalian cells.