Sitotoksisitas Ekstrak Etanol Temulawak (Curcuma xanthorrhiza Roxb.) terhadap Model Sel Fibroblas Gingiva (in vitro) = Cytotoxicity of Curcuma xanthorrhiza Ethanolic Extract (Curcuma xanthorrhiza Roxb.) towards Gingival Fibroblast Cells Model (in vitro)

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Abstrak

Latar Belakang: Temulawak (Curcuma xanthorrhiza Roxb.) adalah tanaman berkhasiat obat asli Indonesia dan merupakan tanaman obat unggulan untuk dikembangkan menjadi obat herbal terstandar. Pada beberapa penelitian, ekstrak etanol temulawak (EET) telah terbukti berkhasiat sebagai antimikroba, namun belum diketahui keamanannya terhadap jaringan mukosa mulut. Tujuan: Mengetahui sitotoksisitas ekstrak etanol temulawak (EET) terhadap sel fibroblas gingiva manusia (in vitro). Metoda: Model sel fibroblas gingiva diperoleh dari kultur primer jaringan gingiva manusia. Ekstrak etanol temulawak (1%, 2,5%, 5%, 10%, 20%, 40%) dipaparkan pada sel fibroblas gingiva dengan durasi paparan 1 jam, 3 jam, dan 24 jam. Viabilitas sel pasca paparan EET dianalisis dengan uji MTT (3-(4,5-dimethyl-thiazol-2-yl)-2,5-diphenyl-tetrazolium bromide) dan sitotoksisitas ditetapkan berdasarkan Inhibition Concentration 50% (IC50). Sedangkan, jumlah sel pasca paparan EET dievaluasi dengan metoda exclusion dye/trypan blue. Hasil: Model sel fibroblas gingiva dapat diperoleh dari kultur primer jaringan gingiva dan secara morfologi teridentifikasi sebagai sel fibroblas. Berdasarkan nilai IC50, EET pada konsentrasi >20% pasca paparan 1 dan 3 jam dan konsentrasi 10% pasca paparan 24 jam sitotoksik terhadap sel fibroblas gingiva. Jumlah sel fibroblas gingiva menurun sesuai dengan peningkatan konsentrasi pada durasi paparan 24 jam. Kesimpulan: Ekstrak etanol temulawak memiliki efek sitotoksik terhadap sel fibroblas gingiva. Sitotoksisitas ekstrak etanol temulawak dipengaruhi oleh konsentrasi dan durasi paparan.

.....Background: Javanese turmeric (Curcuma xanthorrhiza Roxb.) is a herbal plant native to Indonesia and is a superior herbal plant to be developed into a standardized herbal medicine. In some studies, Curcuma xanthorrhiza ethanolic extract (CXEE) had been reported to have antimicrobial effect. However, its safety has not been evaluated for oral mucosal tissue. Objective: To evaluate the cytotoxicity of Curcuma xanthorrhiza ethanolic extract to human primary gingival fibroblast cells (in vitro). Method: Gingival fibroblast cells model were cultured from human primary gingival tissues. CXEE (1%, 2,5%, 5%, 10%, 20%, 40%) was added into gingival fibroblast culture for 1 h, 3 hrs, and 24 hrs. Cells viability after treatment of EET was analized with the 3-(4,5-dimethyl-thiazol-2-yl)-2,5-diphenyl-tetrazolium bromide (MTT) assay and determined by Inhibition Concentration 50% (IC50). Meanwhile, cell density of treated cells was determined by exclusion dye/Trypan Blue. Result: Primary culture of human gingival tissue was able to produce gingival fibroblast cells model that was morphologically identified. Based on IC50, CXEE was cytotoxic againts gingival fibroblast cells at >20% of final concentration after 1 hr and 3 hrs treatment and at 10% of final concentration after 24 hrs treatment. Cell density of gingival fibroblast cells showed reduction as the increase of extract concentration in 24 hrs treatment. Conclusions: Curcuma xanthorrhiza ethanolic extract shows cytotoxic effect againts gingival fibroblast cells and is affected by concentration and duration of treatment.