

## INTISARI

Saat ini, obat kumur merupakan salah satu perawatan gingivitis. Namun, dalam penggunaannya obat kumur berbahan kimia dapat memberikan efek samping sehingga bahan alami mulai dikembangkan sebagai bahan alternatif. Kulit buah manggis (*Garcinia mangostana* L.) diketahui mengandung senyawa bioaktif, seperti *xanthone*, tanin, flavonoid, dan saponin, yang memiliki sifat sebagai antiinflamasi dan antioksidan. Akan tetapi, bahan baru dalam bidang kedokteran gigi harus memenuhi syarat biokompatibilitas. Oleh karena itu, penelitian ini bertujuan untuk mengetahui pengaruh sitotoksik ekstrak kulit manggis sebagai kandidat obat kumur terhadap kultur sel fibroblas.

Uji sitotoksitas dilakukan dengan metode MTT assay. Uji ini dilakukan setelah menyiapkan bahan penelitian yaitu ekstrak kulit manggis konsentrasi 0,263%; 0,106%; dan 0,028%; serta *chlorhexidine gluconate* 0,2% (kontrol positif). Selain itu, kultur sel fibroblas NIH-3T3 telah mencapai konfluensi 80% digunakan sebagai subjek penelitian. Sitotoksik bahan dilihat melalui persentase viabilitas sel. Viabilitas sel dihitung berdasarkan nilai *optical density* (OD), yang diukur menggunakan *microplate reader* dengan panjang gelombang 540 nm.

Dari hasil penelitian, didapatkan rerata persentase viabilitas sel kelompok ekstrak 0,263% sebesar  $49,1\% \pm 12,5\%$ ; ekstrak 0,106% sebesar  $51,5\% \pm 19,3\%$ ; ekstrak 0,028% sebesar  $83,7 \pm 24,1\%$ ; CHX 0,2% sebesar  $77,5\% \pm 23,8\%$ . Data dianalisis menggunakan *One-way ANOVA* menunjukkan adanya perbedaan yang signifikan antar kelompok ( $p < 0,05$ ). Selanjutnya, hasil uji *Post-Hoc* metode *Least Significant Difference* (LSD) menunjukkan adanya perbedaan signifikan antar semua kelompok ( $p < 0,05$ ), kecuali kelompok ekstrak 0,106% dengan 0,263% dan ekstrak 0,028% dengan *chlorhexidine gluconate* 0,2%. Dengan demikian, disimpulkan bahwa ekstrak kulit manggis berpengaruh terhadap sitotoksitas kultur sel fibroblas.

**Kata kunci:** Sel fibroblas, ekstrak kulit manggis, sitotoksitas

## ***ABSTRACT***

Currently, mouthwash was one of the treatments for gingivitis. However, its use of chemical-based mouthwash had caused side effects, prompting the development of natural ingredients as alternative options. The peel of mangosteen fruit (*Garcinia mangostana* L.) was known to contain bioactive compounds, such as xanthenes, tannins, flavonoids, and saponins, which exhibited anti-inflammatory and antioxidant properties. Nevertheless, new materials in dentistry needed to meet biocompatibility requirements. Therefore, this study aimed to determine the cytotoxic effects of mangosteen peel extract as a candidate for mouthwash on fibroblast cell cultures.

The cytotoxicity test was conducted using the MTT assay method. This test was performed after preparing the research materials, including mangosteen peel extract at concentrations of 0.263%, 0.106%, and 0.028%, with 0.2% chlorhexidine gluconate as the positive control. Additionally, NIH-3T3 fibroblast cell cultures that had reached 80% confluence were used as the research subject. The cytotoxicity of the material was evaluated through the percentage of cell viability. Cell viability was calculated based on the optical density (OD) values, which were measured using a microplate reader at a wavelength of 540 nm.

The results of the study showed that the average percentage of cell viability in the 0.263% extract group  $49,1\% \pm 12,5\%$ ; in the 0.106% extract group  $51,5\% \pm 19,3\%$ ; in the 0,028% extract group  $83,7 \pm 24,1\%$ ; and in the 0.2% chlorhexidine gluconate group  $77,5\% \pm 23,8\%$ . The data were analyzed using a *One-way* ANOVA test, showed significant differences between treatment groups ( $p < 0.05$ ). Furthermore, the results of the Post-Hoc *Least Significant Difference* (LSD) test revealed significant differences among all groups ( $p < 0.05$ ), except between the 0.106% and 0.263% extract groups, and between the 0.028% extract group and 0.2% chlorhexidine gluconate. Thus, it was concluded that mangosteen peel extract had cytotoxic effects on fibroblast cell culture.

**Keywords:** Fibroblast cells, mangosteen peel extract, cytotoxicity