

INTISARI

Wireless fidelity merupakan perangkat untuk mengakses internet berbasis teknologi nirkabel yang memancarkan radiasi radiofrekuensi. Radiasi radiofrekuensi menyebabkan produksi *reactive oxygen spesies* berlebih dan mengakibatkan kerusakan sel. Adanya kerusakan sel karena paparan radiasi tersebut dapat meningkatkan mediator inflamasi awal untuk mendukung penarikan makrofag. Penelitian ini bertujuan untuk mengetahui pengaruh radiasi radiofrekuensi perangkat *wireless fidelity* terhadap jumlah makrofag pada jaringan gingiva tikus *Sprague dawley*.

Tiga puluh ekor tikus *Sprague dawley* dibagi ke dalam 3 kelompok secara acak, masing-masing terdiri dari 10 ekor yaitu kelompok A sebagai kontrol negatif yang tidak diberi paparan radiasi perangkat *wireless fidelity*, kelompok B sebagai perlakuan yang diberi paparan radiasi perangkat *wireless fidelity* 6 jam per hari selama 10 hari, serta kelompok C sebagai perlakuan yang diberi paparan radiasi perangkat *wireless fidelity* 24 jam per hari selama 10 hari. Sepuluh ekor tikus dari setiap kelompok didekapitasi dan diambil sampel jaringan gingiva bagian labial pada regio insisivus rahang bawah untuk dibuat preparat gingiva dengan menggunakan teknik pewarnaan *Hematoxylin Eosin*. Preparat gingiva tersebut dihitung jumlah sel makrofag. Data yang didapat dianalisis menggunakan *One-Way ANOVA* dan *LSD* dengan tingkat kepercayaan 95%.

Hasil penelitian menunjukkan bahwa kelompok kontrol negatif mempunyai rerata jumlah makrofag terendah, sedangkan kelompok yang diberi paparan radiasi 24 jam per hari selama 10 hari mempunyai rerata jumlah makrofag tertinggi. Hasil analisis *One-Way ANOVA* antar ketiga kelompok terdapat perbedaan jumlah makrofag yang signifikan ($p < 0,05$), sehingga dapat disimpulkan bahwa radiasi radiofrekuensi perangkat *wireless fidelity* berpengaruh terhadap jumlah makrofag pada jaringan gingiva tikus *Sprague dawley*.

Kata kunci : *Wireless fidelity*, radiasi radiofrekuensi, makrofag, gingiva

ABSTRACT

Wireless fidelity is a device to access internet based wireless technology that emits radiofrequency radiation. Radiofrequency radiation causes excessive reactive oxygen species production and results in cells damage. Cells damage due to exposure to radiation can increase the initial inflammatory mediators to encourage the withdrawal of macrophages. This study aimed to determine the effect of wireless fidelity device radiofrequency radiation on the number of macrophages in the gingival tissue of *Sprague dawley* rat.

Thirty *Sprague dawley* rats were randomly divided into 3 groups, that each groups consist of 10 rats : group A as a negative control which was not given radiation exposure from wireless fidelity device, group B as a treated which was given radiation exposure 6 hours/day for 10 days from wireless fidelity device, group C as a treated which was given radiation exposure 24 hours/day for 10 days from wireless fidelity device. Ten *Sprague dawley* rats from each groups were decapitated and a labial gingival tissue sample was taken from insicive mandible region to create histological slides using Hematoxylin Eosin staining technique. The histological slides of gingival tissue were calculated by the number of macrophages. The data obtained were analyzed by One-Way ANOVA and LSD with 95% confidence level.

The results showed that group as a negative control had the lowest average the number of macrophages, meanwhile group was given radiation exposure for 24 hours/day until 10 days had the highest average the number of macrophages. The result of One-Way ANOVA analysis between three groups, there were significant differences in the number of macrophages ($p < 0.05$), so the conclusion of this study was radiofrequency radiation from wireless fidelity device affected the number of macrophages in the gingival tissues of *Sprague dawley* rat.

Keywords: Wireless fidelity, radiofrequency radiation, macrophages, gingival