INTISARI

Eugenol adalah bahan *anodyne medikamen* yang sering digunakan dalam penanganan pulpitis akut. Eugenol terbukti mampu menurunkan mediator inflamasi TNF-α pulpitis namun juga bersifat iritatif jika diaplikasikan langsung pada pulpa. Penggunaan eugenol terlalu lama dalam kavitas juga menyebabkan munculnya lesi periapikal. Tujuan penelitian ini adalah menganalisis pengaruh volume dan lama paparan eugenol, serta interaksi keduanya terhadap ekspresi TNF-α pulpa gigi tikus *Sprague dawley* yang terinflamasi.

Jenis penelitian adalah *post test only control group design* menggunakan 40 ekor tikus *Sprague dawley* yang dibagi 20 kelompok. Gigi molar 1 atas kanan hewan coba dipreparasi dengan kedalaman 1mm kemudian diaplikasikan eugenol volume 0,1µl; 0,08µl; 0,02µl dan *aquadest* steril sebagai kelompok kontrol. Masing -masing kelompok dikorbankan pada 1jam, 1hari, 3hari, 5hari dan 7hari dan dibuat preparat histologi dengan pewarnaan IHC. Penilaian ekspresi TNF- α menggunakan mikroskop perbesaran 400x dengan bantuan software *imageJ*.

Hasil penelitian menunjukkan ekspresi TNF-α paling rendah adalah kelompok volume eugenol 0,08 µl ($\overline{x}$ = 11,04 ± 0,5 sampai $\overline{x}$ = 14,68 ± 1,5) dibanding kelompok volume 0,1µl; 0,02µl dan kelompok kontrol pada 1 hari hingga hari ke-5. Hasil uji statistik menunjukkan data terdistribusi normal (p=0,504) dan homogen (p=0,686), *Uji Two way Annova* menunjukkan perbedaan bermakna (p<0,05) pada kelompok volume dan kelompok lama paparan, serta terdapat interakasi antara volume dan lama paparan eugenol sehingga dilanjutkan dengan uji LSD. Kesimpulan penelitian ini adalah pemberian eugenol 0,08 µl menurunkan ekspresi TNF-α pulpa gigi tikus *Sprague dawley* yang terinflamasi dengan ekspresi terendah pada lama paparan 1 hari. Lama paparan 7 hari meningkatkan ekspresi TNF-α pulpa gigi tikus *Sprague dawley* yang terinflamasi.

Kata kunci : volume eugenol, lama paparan eugenol, ekspresi TNF-α, pulpitis

ABSTRACT

Eugenol is an anodyne medicament which is often used in the treatment of acute pulpitis. Eugenol has been shown to be able to reduce the inflammatory mediator TNF-α pulpitis but is also irritating when applied directly to the pulp. Prolonged use of eugenol in the cavity also causes the appearance of periapical lesions. The aim of this study was to analyze the effect of volume and length of exposure to eugenol, as well as their interactions on the expression of TNF-α in the dental pulp of inflamed Sprague Dawley rats.

This type of research was a post test only control group design using 40 Sprague Dawley rats which were divided into 20 groups. The first upper right molars of the experimental animals were prepared to a depth of 1mm and then eugenol was applied with a volume of 0.1µl; 0.08µl; 0.02µl and sterile aquadest as the control group. Each group was sacrificed at 1 hour, 1 day, 3 days, 5 days and 7 days and histological preparations were made with IHC staining. Evaluation of TNF-α expression using a 400x magnification microscope with the help of imageJ software.

The results showed that the lowest TNF-α expression was in the 0.08 µl eugenol volume group ($\bar{x}$ = 11,04 ± 0.5 to $\bar{x}$ = 14,68 ± 1,5) compared to the 0.1µl volume group; 0.02µl and the control group on day 1 to day 5. The statistical test results showed that the data were normally distributed (p=0.504) and homogeneous (p=0,686), the Two way Annova test showed significant differences (p<0,05) in the volume group and the length of exposure group, and there was an interaction between volume and length of exposure eugenol so proceed with the LSD test. The conclusion of this study was that eugenol 0,08 µl reduced the expression of TNF-α in the dental pulp of inflamed Sprague Dawley rats with the lowest expression at 1 day of exposure. Exposure time of 7 days increased the expression of TNF-α in the inflamed Sprague Dawley rat dental pulp.

Keywords: eugenol volume, eugenol exposure time, TNF-α expression, pulpitis