

INTISARI

Pergerakan gigi secara ortodonti diperoleh melalui remodeling jaringan periodontal menghasilkan daerah tekanan dan daerah tarikan. Daerah tekanan terbentuk akibat tertekannya ligamen periodontal searah dengan arah pergerakan gigi. Remodeling pada daerah tekanan dipengaruhi salah satunya oleh sel osteoklas. Penelitian ini bertujuan untuk menganalisis pengaruh pemberian kafein dalam cokelat terhadap jumlah sel osteoklas daerah tekanan gigi tikus *Sprague dawley* yang digerakkan secara ortodonti.

Sebanyak 24 ekor tikus *Sprague dawley* jantan dibagi menjadi 2 kelompok yaitu: kelompok kontrol dan perlakuan. Semua tikus diberi induksi alat ortodonti berupa *spring* dengan koil diameter 2 mm dan panjang lengan kawat 5 mm pada kedua gigi insisivus rahang atas. Besar gaya adalah 35 *gramforce* bergerak kearah distal. Kelompok perlakuan diberi minuman cokelat mengandung kafein 2,7 mg melalui sonde lambung. Tikus dieutanasia pada hari ke 0,1,7, dan 14. Pembuatan preparat histologis menggunakan pewarnaan *tartrate-resistant acid phosphatase* (TRAP). Pengamatan sel osteoklas menggunakan mikroskop cahaya dilengkapi OPTILAB. Data dianalisis menggunakan analisis variansi dua jalur dan uji *post hoc* LSD.

Hasil penelitian menunjukkan bahwa jumlah sel osteoklas daerah tekanan kelompok perlakuan terhitung lebih banyak daripada kelompok kontrol ($p < 0,05$). Kesimpulan penelitian adalah kafein dalam cokelat dapat meningkatkan jumlah sel osteoklas daerah tekanan gigi tikus *Sprague dawley* yang digerakkan secara ortodonti.

Kata kunci: pergerakan gigi secara ortodonti, daerah tekanan, osteoklas, kafein cokelat.

ABSTRACT

Orthodontic tooth movement is obtained through periodontal tissue remodeling resulting compressed area and tensile area. Compressed area is formed by pressed periodontal ligament in the same direction with tooth movement. Remodeling at the compression side influenced by osteoclasts. The objective of this study was to determine the effect of caffeine in chocolate drink against the number of osteoclasts cells in compression side during orthodontic tooth movement on Sprague dawley.

Twenty four male Sprague dawley rats were divided into two groups: control and experimental. The maxillary incisors were moved distally with 35 gramforce by the spring consist of coil 2 mm in diameter and wire 5 mm in length. Animal in experimental group received chocolate drink contains 2,7 mg of caffeine through gastric sonde. Animal of each groups were sacrificed at 0, 1, 7, and 14 days. Histologic specimens stained with tartrate-resistant acid phosphatase. Osteoclast observation was done by light microscope connected to OPTILAB. Data was analyse by two way ANOVA and post hoc LSD test.

The result showed that the number of osteoclast in experimental group was higher than control group ($p < 0,05$). This result indicates that chocolate drink contains caffeine can increased number of osteoclasts in compression side during orthodontic tooth movement.

Keywords: orthodontic tooth movement, compression side, osteoclast, chocolate caffeine.