INTISARI

Pergerakan gigi secara ortodonti didasari remodeling tulang yang meliputi resorpsi tulang oleh osteoklas dan pembentukan tulang baru oleh osteoblas. Remodeling tulang usia tua didominasi oleh resorpsi tulang. Madu memiliki kandungan polifenol dan flavonoid yang mengikat spesies oksigen reaktif sehingga menurunkan kadar *tartrate-resistant acid phosphatase* yang berperan dalam proses resorpsi tulang. Penelitian ini bertujuan untuk menganalisis pengaruh pemberian madu terhadap kadar TRAP cairan sulkus gingiva sisi tertekan pergerakan gigi secara ortodonti pada tikus *Sprague-Dawley* tua dan muda.

Dua belas tikus *Sprague-Dawley* jantan dibagi menjadi 4 kelompok muda kontrol, muda madu, tua kontrol dan tua madu, setiap kelompok berisi 3 tikus. Tikus muda berumur 6 bulan, tikus tua berumur 12-14 bulan. Gigi tikus digerakkan secara ortodonti dengan gaya 0,35N menggunakan *open coil* diantara gigi incisivus rahang atas. Madu sebanyak 0,40 ml/200gr BB diberikan secara rutin selama 14 hari pergerakan gigi secara ortodonti. Cairan krevikuler gingiva diambil intrasulkuler pada gigi insisivus rahang atas sisi tertekan (distal) untuk pengamatan kadar TRAP. Analisis kadar TRAP dilakukan dengan metode ELISA. Analisis statistik dilakukan menggunakan uji ANAVA tiga jalur dan uji *Post Hoc* LSD $p<0,05$.

Hasil penelitian menunjukkan pemberian madu menurunkan kadar TRAP secara signifikan. Pada hari ke 14 kadar TRAP kelompok usia tua sama dengan kelompok muda. Kesimpulan penelitian ini adalah pemberian madu menurunkan kadar TRAP pada fase pergerakan gigi secara ortodonti.

Kata kunci : *Tartrate-resistant acid phosphatase*, madu, pergerakan gigi secara ortodonti, umur

ABSTRACT

Orthodontic tooth movement is based on bone remodeling which includes bone resorption by osteoclasts and new bone formation by osteoblasts. Remodeling in aging is dominated by bone resorption. Honey contains polyphenols and flavonoids which bind reactive oxygen species to reduce levels of tartrate-resistant acid phosphatase that play a role in bone resorption. This study aims to analyze the effect of honey administration on TRAP levels of gingival crevicular fluid on compression side of orthodontic tooth movement in old and young Sprague-Dawley rats.

Twelve male *Sprague-Dawley* rats divided into four groups (young rats with and without honey administration and old rats with and without honey administration), each groups contains three rats. Young male rats (6 months old) and old male rats (12-14 months old) were divided into group with honey administration and a control group without honey administration. Teeth were moved orthodontically with a force of 0.35N using an open coil between the maxillary incisors. Honey was given 0.40 ml/200gr BW for 14 days of orthodontic tooth movement. Gingival crevicular fluid was taken intrasulcular from the distal side to observe TRAP levels. Analysis of TRAP levels was carried out using the ELISA method. Statistical analysis was performed using the three-way ANOVA test and the LSD Post Hoc test $p<0.05$.

The results showed that giving honey significantly reduced TRAP levels. There is no significant difference of TRAP level after 14 days of honey administration in young and old rats. This study concluded that giving honey during the orthodontic tooth movement phase can reduce TRAP levels.

Keywords: Tartrate-resistant acid phosphatase, honey, orthodontic tooth movement, age