# INTISARI

*Olive oil* merupakan fitoestrogen dan antioksidan alami yang mirip dengan estrogen mamalia, dapat meningkatkan diferensiasi osteoblas sehingga meningkatkan ekspresi osteoprotegerin (OPG). Penelitian bertujuan mempelajari pengaruh *olive oil* terhadap ekspresi OPG cairan sulkus gingiva (GCF) sisi tertarik pada pergerakan gigi secara ortodonti *guinea pig* tua dan muda.

Empat kelompok *guinea pig* (n = 3), terdiri dari *guinea pig* tua diberi *olive oil* (TO), tua kontrol (TK), muda diberi *olive oil* (MO) dan muda kontrol (MK). Gigi digerakkan dengan *open coil spring* 0,35 N yang dipasang pada braket kedua insisivus bawah. Kelompok MO diberi *olive oil* dengan dosis 0,7 ml/hari dan kelompok TO diberi *olive oil* dengan dosis 1,86 ml/hari sampai hari ke-14. Ekspresi OPG dianalisis menggunakan *enzyme-linked immunosorbent assay* (ELISA) pada hari ke-0, 7, dan 14. Data dianalisis dengan uji statistic three-way Anova dilanjutkan uji *post hoc* LSD.

Hasil penelitian *olive oil* meningkatkan ekspresi OPG *guinea* pig tua dan muda ($p<0,05$), ekspresi OPG TO sebanding dengan MK hari ke-7, ekspresi OPG MO lebih tinggi dibandingkan TO ($p<0,05$), semakin lama pemberian *olive oil* semakin tinggi ekspresi OPG ($p<0,05$), terdapat interaksi antara *olive oil* dengan usia dan lama pemberian ($p<0,05$). Kesimpulan penelitian ini *olive oil* meningkatkan ekspresi OPG GCF *guinea pig* tua dan muda selama pergerakan gigi secara ortodonti, ekspresi OPG tertinggi pada MO hari ke-14.

**Kata kunci:** *olive oil*, *osteoprotegerin*, pergerakan gigi secara ortodonti, usia.

# ABSTRACT

Olive oil is a natural fitoestrogen and antioxidant that similar with mammalian estrogens, it can increase osteoblast differentiation so increase osteoprotegerin (OPG) expression. The aim of this study to study the effect of olive oil on the OPG expression of gingival sulcus fluid (GCF) tension side on the orthodontic tooth movement of old and young guinea pigs.

Four groups of guinea pigs (n = 3), consisted of old guinea pigs given olive oil (TO), old control (TK), young given olive oil (MO) and young controls (MK). The teeth are driven by a 0.35 N open coil spring which is attached to the second bracket of the lower incisors. MO group was given olive oil at a dose of 0.7 ml / day and TO group was given olive oil at a dose of 1.86 ml / day until day 14.OPG expression was analyzed using enzyme-linked immunosorbent assay (ELISA) on days 0, 7, and 14. Data were analyzed by means of the three-way Anova statistical test followed by post hoc LSD test.

Results: olive oil increased the OPG expression of old and young guinea pigs ($p < 0.05$), the OPG expression of TO was comparable to the 7th day of MK, the OPG MO expression was higher than the TO ($p < 0.05$), the longer the olive oil was given, the higher the OPG expression ($p<0.05$), there an interaction between olive oil with age and the duration of administration ($p < 0.05$). The conclusion of this study that olive oil increased the OPG expression of old and young guinea pig GCF during orthodontic tooth movement, the highest OPG expression on MO day 14.

Keywords: age, olive oil, orthodontic tooth movement, osteoprotegerin.