ABSTRAK

EFEK APLIKASI INTERPROKSIMAL SEPARATOR ELASTIS ORTODONTI TERHADAP KADAR MATRIK METALLOPROTEINASE 8 (MMP 8) dan *TISSUE INHIBITOR MATRIX METALLOPROTEINASE* 1(TIMP 1)

(Penelitian Eksperimental Laboratoris pada Tikus Putih Galur *Sprague Dawley*)

Aplikasi interproksimal separator elastis orthodonti berbahan elastomer pada perawatan orthodontik menghasilkan perubahan biokimiawi pada jaringan periodontal. *Matrix metalloproteinase*-8 (MMP 8) dan *tissue inhibitor matrix metalloproteinase* 1 (TIMP-1) memainkan peran yang penting dalam remodeling ligamentum periodontal selama pergerakan gigi. Tujuan dari penelitian ini untuk melihat efek aplikasi interproksimal separator elastis orthodonti terhadap kadar *matrix metalloproteinase*-8 (MMP-8) dan *tissue inhibitor matrix metalloproteinase*-1 (TIMP 1) pada tikus dengan analisis ELISA.

Dua puluh *Sprague dawley* secara acak dibagi menjadi dua kelompok, 10 kelompok kontrol dan 10 perlakuan yang diamati selama tiga hari. Pengambilan sampel cairan sulkus gingiva dilakukan terhadap kedua kelompok pada hari 1, 2 dan 3. Sampel dianalisis dengan ELISA. Analisis statistik yang digunakan adalah *Mann-Whitney* dan *Spearman*. Kadar *matrix metalloproteinase*-8 (MMP-8) dan *tissue inhibitor matrix metalloproteinase*-1 (TIMP 1) signifikan pada perlakuan dibandingkan kontrol ($p<0.05$). Korelasi kadar matrix metalloproteinase 8 (MMP-8) dan tissue inhibitor matrix metalloproteinase 1 (TIMP-1) yaitu korelasi negatif.

Kadar *matrix metalloproteinase* 8 (MMP-8) tertinggi pada hari 3 dan terendah pada hari 1, berbanding terbalik dengan *kadar tissue inhibitor matrix metalloproteinase* 1 (TIMP-1).

Kata kunci: Interproksimal separator elastis orthodonti, kadar MMP-8, kadar TIMP-1

ABSTRACT

EFFECT OF INTERPROXIMAL SEPARATOR APPLICATION OF ELASTIC ORTHODONTIC TO MATRIC LEVELS OF METALLOPROTEINASE 8 (MMP 8) AND TISSUE INHIBITOR MATRIX METALLOPROTEINASE 1 (TIMP 1)

(Laboratory Experimental Research on Sprague Dawley White Rat)

Interproximal applications of elastomeric orthodontic elastic separators in orthodontic treatment produce biochemical changes in periodontal tissues. Matrix metalloproteinase-8 (MMP 8) and tissue matrix inhibitor metalloproteinase 1 (TIMP-1) play an important role in the remodeling of the periodontal ligament during tooth movement. The aim of this study was to see the effect of interproximal orthodontic elastic separator application on matrix metalloproteinase-8 (MMP-8) levels and matrix metalloproteinase-1 tissue inhibitor (TIMP 1) in rat by ELISA analysis.

Twenty Sprague Dawley were randomly divided into two groups, 10 control groups and 10 treatments were observed for three days. Gingival sulcus fluid sampling was carried out on both groups on days 1, 2 and 3. The samples were analyzed by ELISA. The statistical analysis used was Mann-Whitney and Spearman. Matrix metalloproteinase 8 (MMP 8) levels and matrix metalloproteinase-1 tissue inhibitors (TIMP 1) were significant in treatment compared to controls ($p < 0.05$). Correlation of matrix metalloproteinase 8 (MMP-8) and matrix metalloproteinase 1 (TIMP-1) tissue inhibitors is negative correlation.

The highest matrix metalloproteinase 8 (MMP-8) levels on day 3 and lowest on day 1, were inversely proportional to tissue inhibitor matrix metalloproteinase 1 (TIMP-1) levels.

Keywords: Interproximal orthodontic elastic separator, MMP-8 level, TIMP-1 level