ABSTRAK

Penempatan braket logam *stainless steel* di dalam rongga mulut dalam jangka waktu yang lama dapat menyebabkan lepasnya ion seperti ion Fe dan Cr. Pelepasan ion pada braket logam dapat memberikan dampak biologis bagi tubuh dan dampak mekanis bagi braket, yaitu perubahan *surface characterization* yang ditunjukan dengan celah pada braket. Perubahan ini dapat menyebabkan berkurangnya efektifitas perawatan ortodonsi, mempengaruhi estetik, serta dapat memberikan tempat perlekatan bakteri *Streptococcus mutans*. Penelitian ini bertujuan untuk mengetahui hubungan pelepasan ion Fe dan Cr pada braket metal *stainless steel* terhadap *surface characterization.*

Metode yang digunakan dalam penelitian ini adalah observasional analitik dengan rancangan *cohort retrospective*. Sampel penelitian menggunakan braket metal *stainless steel* dengan slot 0,22" premolar rahang bawah dengan merek *American Orthodontic* (AO) yang sudah menglami pelepasan ion. Pengamatan *surface characterization* pada braket dilakukan dengan menggunakan alat *Scanning Electron Microscope* (SEM) dengan 5000 kali perbesaran. Nilai *surface characterization* didapatkan dari menghitung rerata hasil pengukuran panjang celah pada tiap sampel braket.

Hasil penelitian menunjukan rerata nilai *surface characterization* sebesar 1,3461813 µm. Hasil uji korelasi *Pearson* diperoleh nilai kekuatan korelasi ion Fe dan Cr terhadap *surface characterization* sangat lemah dan arahnya positif. Nilai *p* pada ion Fe dan Cr menunjukan $p>0,05$ yang berarti tidak terdapat hubungan yang signifikan.

Kesimpulan yang diperoleh adalah tidak terdapat hubungan antara pelepasan ion Fe dan Cr pada braket metal *stainless steel* terhadap *surface characterization*. Lepasnya ion Fe dan Cr ditunjukan dengan adanya celah mikroskopik akibat korosi *pitting*.

Kata Kunci: Braket Logam *Stainless Steel*, Pelepasan Ion, SEM, *Surface Characterization*, Korosi *Pitting*

ABSTRACT

The placement of the stainless steel metal bracket in the oral cavity for a long time can release ions such as Fe and Cr. The release of the ions in the metal bracket can bring biological impacts for bodies and mechanical impacts for the bracket called the surface characterization changes was showed by slits on the bracket. These changes cause a reduction of the orthodontic treatment effectiveness, affect the esthetics, and allow the attachment Streptococcus mutans bacteria. This study aims to discover the relationship between the release of Fe and Cr ions in stainless steel metal brackets to the surface characterization.

The method used in this study is observational analytic with a retrospective cohort design. The sample of this research was stainless steel metal bracket with mandibular premolar 0,22" slot by the American Orthodontic (AO) had ion released. The observation of the surface characterization in the bracket was done by using Scanning Electron Microscope (SEM) with x5000 magnification. The value of surface characterization was obtained from calculations of average value of slits length measurement in each bracket sample.

The result of this study showed that the average of surface characterization value was 1,3461813 μm. Pearson correlation test result showed that the correlation between Fe and Cr ions to surface characterization was very weak, and the value was positive. The Fe and Cr ions p value shows p>0,05 which means there is no significant relationship.

Based on the findings, it can be concluded that there is no significant relationshiop between the release of Fe and Cr ions in the stainless steel metal bracket to the surface characterization. The release of Fe and Cr ions is indicated by the presence of microscopic slits due to pitting corrosion.

Keywords: *Stainless Steel Metal Bracket, Ion Release, SEM, Surface Characterization, Pitting Corrosion*