

## ABSTRAK

Pemasangan braket logam *stainless steel* pada gigi pasien dalam jangka waktu lama dapat menyebabkan lepasnya ion seperti ion Ni dan Mn. Pelepasan ion pada braket logam dapat berdampak bagi tubuh berupa reaksi hipersensitivitas sedangkan dampak bagi braket yaitu perubahan permukaan braket yang ditunjukkan dengan celah pada braket. Perubahan ini dapat menyebabkan berkurangnya efektifitas perawatan ortodonsi, estetik, kualitas dan kekuatan braket, serta dapat memberikan tempat perlekatan bakteri *Streptococcus mutans*. Penelitian ini bertujuan untuk mengetahui pelepasan ion (Ni dan Mn) pada permukaan braket metal *stainless steel*.

Metode penelitian ini berjenis deskriptif. Sampel penelitian merupakan braket metal *stainless steel* dengan merek *American Orthodontic* (AO) premolar rahang bawah dengan slot 0,22” yang sudah mengalami pelepasan ion. Pengamatan pelepasan ion Ni, Mn, Fe dan Cr pada braket dilakukan menggunakan alat *Scanning Electron Microscope-Energi Dyspersive X-Ray Spectroscopy* (SEM-EDX)

Hasil penelitian menunjukkan rerata persentase ion Ni turun sebesar 0,758 % sedangkan ion Mn turun sebesar 0,324 %. Persentase pelepasan ion dihitung dari total ion Ni, Mn, Fe dan Cr.

Kesimpulan yang diperoleh adalah terdapat perbedaan pelepasan ion (Ni dan Mn) pada permukaan braket metal *stainless steel*. Lepasnya ion Ni dan Mn ditunjukkan dengan adanya celah mikroskopik akibat korosi *pitting*.

**Kata kunci:** Braket Metal *Stainless Steel*, Pelepasan Ion, SEM-EDX, Korosi *Pitting*

## **ABSTRACT**

*The installation of stainless steel metal brackets on the patient's teeth in a long phase will interact with the oral cavity environment which causes the release of ions such as Ni and Mn ions. Their release in the metal bracket can impact the body in the form of hypersensitivity reactions while the impact on the bracket is the bracket surface changes shown by the gap in it. These changes can reduce the effectiveness of orthodontic and aesthetics treatments, quality and the strength of the bracket, and can provide an attachment place for Streptococcus mutans microbe. The aim of this study was to determine the release of the ions (Ni and Mn) on the stainless steel metal bracket surface.*

*This study was a descriptive research. The research sample used a stainless steel metal bracket with 0.22" lower jaw premolar slots which was marked by the American Orthodontic (AO) brand which experienced the ions release. The observation of ion Ni, Mn, Fe and Cr release on the bracket was carried out by using a Scanning Electron Microscope-Energy Dyspersive X-Ray Spectroscopy's tool (SEM-EDX).*

*The results showed that the mean percentage of Ni ions decreased by 0.758 % while the mean percentage of Mn ions decreased by 0.324 %. The percentage of ion release is calculated from all ion Ni, Mn, Fe and Cr.*

*The results can be concluded that there were differences of ion release` (Ni and Mn) on the stainless steel metal bracket surface. Their release was demonstrated by the presence of microscopic gaps due to pitting corrosion.*

**Keywords:** *Stainless Steel Metal Brackets, Ion Removal, SEM-EDX, Pitting Corrosion*