

INTISARI

Jenis kawat busur ortodonti yang sering digunakan dalam perawatan ortodonti adalah kawat busur NiTi *non-coated* dan Rhodium *coated*. Korosivitas dan gaya *unloading* pada kawat dapat mengalami perubahan karena penggunaan obat kumur yaitu *chlorhexidine* 0,12%. Tujuan penelitian ini untuk mengetahui pengaruh perendaman larutan *chlorhexidine* 0,12% terhadap korosivitas dan gaya *unloading* kawat busur NiTi *non-coated* dan Rhodium *coated* diameter 0,014” pada perendaman 1, 7, dan 14 hari.

Sebanyak 48 kawat busur NiTi *non-coated* dan Rhodium *coated* dibagi menjadi 12 kelompok (n=4) dipotong sepanjang 30 mm, dikelompokkan berdasarkan media perendaman (*chlorhexidine* 0,12% dan saliva buatan) dan waktu perendaman (1,7,14 hari). Pada kelompok perendaman *chlorhexidine*, kawat direndam dan dikocok selama satu menit sebanyak dua kali dalam sehari kemudian dibilas. Penelitian dilakukan pengulangan selama 1, 7, dan 14 hari. Larutan perendaman diuji korosivitas dengan *Atomic Absorption Spectrophotometry* (AAS) dan kawat busur diuji gaya *unloading* menggunakan uji *three point bending*. Analisis penelitian menggunakan uji statistik *Two-way Anova*, DMRT 5%, dan regresi linier.

Hasil penelitian menunjukkan kawat busur NiTi *non-coated* yang direndam dalam *chlorhexidine* memiliki korosivitas sebesar 0,0083 ppm dan *unloading force* sebesar 2,0275 N yang tinggi setelah 14 hari. Uji SEM pada kawat busur NiTi *non-coated* terlihat kasar dan porositas yang lebih besar, sedangkan pada kawat Rhodium *coated* terlihat lapisan *coating* terkelupas, dan *pitting*. Hasil regresi linier menunjukkan korosivitas berpengaruh terhadap gaya *unloading* kawat busur. Simpulan penelitian ini adalah perendaman kawat busur NiTi *non-coated* dan Rhodium *coated* pada larutan *chlorhexidine* hari ke-14 memiliki korosivitas dan gaya *unloading* paling besar dibandingkan dengan lama perendaman pada hari ke-1 dan 7.

Kata kunci: korosivitas, *unloading force*, *chlorhexidine*, kawat busur NiTi, kawat busur Rhodium *coated*

ABSTRACT

The types of orthodontic archwires commonly used in orthodontic treatment are NiTi non-coated and Rhodium-coated. Corrosivity and unloading force on the wires may undergo changes due to the use of mouthwash, specifically chlorhexidine 0.12%. The aim of this study was to investigate the effect of immersing NiTi non-coated and Rhodium coated with a diameter of 0.014" in chlorhexidine 0.12% solution on their corrosivity and unloading force after immersion for 1, 7, and 14 days.

A total of 48 NiTi non-coated and Rhodium coated archwires were divided into 12 groups (n=4) cut to a length of 30 mm. They were grouped based on immersion media (chlorhexidine 0.12% and artificial saliva) and immersion time (1, 7, 14 days). In the chlorhexidine immersion group, the wires were immersed and shaken for one minute twice a day, then rinsed and immersed in artificial saliva. The study was repeated for 1, 7, and 14 days. The immersion solution was tested for corrosivity using Atomic Absorption Spectrophotometry (AAS), and the archwires were tested for unloading force using a three-point bending test. Statistical analysis was performed using Two-way Anova, DMRT 5%, and linear regression.

The results showed that NiTi non-coated immersed in chlorhexidine exhibited high corrosivity 0.0083 ppm and unloading force 2.0275 N after 14 days. SEM analysis of NiTi non-coated archwires revealed a rougher surface with larger porosities, while Rhodium coated archwires showed peeling of the coating and pitting. Linear regression results indicated that corrosivity influenced the unloading force of the archwires. In conclusion, the immersion of non-coated NiTi archwire and Rhodium-coated archwire in chlorhexidine solution on the 14th day has the highest corrosivity and unloading force compared to immersion durations on days 1 and 7.

Key words: corrosivity, unloading force, chlorhexidine, NiTi archwire, Rhodium coated archwire