

INTISARI

Kawat ortodonti *stainless steel* dapat mengalami korosi yang menyebabkan efek buruk bagi tubuh pengguna alat ortodonti maupun bagi kawat itu sendiri. Korosi dapat dihambat dengan inhibitor korosi berupa ekstrak daun belimbing wuluh. Ekstrak daun belimbing wuluh perlu diuji stabilitasnya dalam pengembangannya sebagai suatu produk. Tujuan penelitian ini adalah untuk mengetahui pengaruh waktu penyimpanan ekstrak daun belimbing wuluh terhadap stabilitas dan laju korosi kawat ortodonti *stainless steel* dalam waktu pengamatan selama 7, 14, dan 28 hari.

Sampel kawat yang digunakan berjumlah 27 buah yang dibagi dalam tiga kelompok perlakuan yaitu kelompok 7 hari, 14 hari, dan 28 hari. Kawat ortodonti *stainless steel* berdiameter 0,7 mm dipotong sepanjang 3 cm dan dibengkokkan membentuk huruf U kemudian diukur berat awalnya. Kawat direndam dalam saliva buatan dan dipindahkan ke ekstrak daun belimbing wuluh. Sesuai dengan kelompok perlakuannya, kawat ditimbang berat akhirnya dan diukur laju korosinya. Ekstrak daun belimbing wuluh diukur stabilitasnya dengan metode spektrofotometri.

Hasil uji *one way ANOVA* menunjukkan nilai signifikansi $<0,05$ dan pada uji *Post Hoc LSD* diperoleh hasil bahwa terdapat perbedaan bermakna antarkelompok perlakuan. Kesimpulan penelitian ini adalah waktu penyimpanan ekstrak daun belimbing wuluh berpengaruh terhadap stabilitas dan laju korosi kawat ortodonti *stainless steel*. Stabilitas ekstrak menurun dan laju korosi kawat ortodonti *stainless steel* meningkat dalam waktu penyimpanan 7, 14, dan 28 hari.

Kata kunci: kawat ortodonti *stainless steel*, korosi, ekstrak daun belimbing wuluh, stabilitas.

ABSTRACT

Stainless steel orthodontic wire is possible to get corrosion that can cause a negative effects on a human body with orthodontic appliances and also the wire itself. Corrosion can be inhibited by corrosion inhibitors such as *Averrhoa bilimbi* leaves extract. The stability of *Averrhoa bilimbi* leaves extract is needed to be examined in its development as a product. The purpose of this study was to investigate the effect of *Averrhoa bilimbi* leaves extract's time of storage to the stability and corrosion rate of stainless steel orthodontic wire within 7, 14, and 28 days.

This research used 27 wires as the sample and those are divided into three groups, 7 days, 14 days, and 28 days. Stainless steel orthodontic wire with a diameter of 0.7 mm is cut 3 cm long, bent into 'U' shape, and its initial weight is also measured. The wire is soaked in artificial saliva and moved to the *Averrhoa bilimbi* leaves extract. The final weight and corrosion rate of each group's wire are measured. The stability of leaves extract is also measured by spectrophotometry method.

The result of one way ANOVA test shows significance value <0.05 and Post Hoc LSD test shows that there is a noticeable difference between groups. It can be concluded that the time of storage of *Averrhoa bilimbi* leaves extract affects its stability and the corrosion rate of stainless steel orthodontic wire. In addition, the stability of stainless steel orthodontic wire is increased during 7, 14, and 28 days of the time of storage.

Keywords: stainless steel orthodontic wire, corrosion, *Averrhoa bilimbi* L, stability.