ABSTRAK

Power chain adalah material ortodontik cekat yang berbahan dasar *polyurethane elastomer*. Polimer penyusunnya merupakan polimer dengan berat molekul rendah yang membentuk ikatan silang (*cross link*), sehingga *power chain* bersifat dapat kembali ke bentuk semula (*shape memory*) dan kembali ke ukuran semula (*elastic memory*). Saat menerima beban tarik, ikatan tersebut tidak stabil lalu mengalami deformasi substansi secara permanen yang menyebabkan *power chain* mengalami penurunan gaya (*force decay*). Ikatan tersebut juga dapat terhidrolisis jika *power chain* berkontak dengan cairan, salah satunya adalah obat kumur. Penelitian ini bertujuan untuk mengetahui pengaruh perendaman obat kumur propolis terhadap *force decay* pada *power chain*.

Jenis penelitian yang digunakan yaitu *true experimental laboratoris* dengan *pretest-posttest control group design*, dilakukan dengan membagi 2 kelompok sampel dengan masing-masing kelompok berjumlah 8 sampel. Kelompok kontrol (direndam saliva buatan) dan kelompok perlakuan (direndam obat kumur propolis) diinkubasi pada suhu 37° C selama 28 menit. Gaya diukur menggunakan *Universal Testing Machine*.

Pada analisis data diperoleh hasil rerata *force decay* sebesar 1,30 N dan 1,10 N, sedangkan pada uji *Independent T-test* didapatkan $p = 0{,}040$, yang artinya terdapat perbedaan *force decay* signifikan.

Pada penelitian ini dapat disimpulkan perendaman *power chain* dalam obat kumur propolis memiliki penurunan gaya (*force decay*) yang lebih kecil dibanding perendaman *power chain* dalam saliva buatan. Selain itu, terlihat pula perbedaan *force decay* yang signifikan pada kedua kelompok.

Kata Kunci: *Power chain, force decay,* obat kumur propolis.

ABSTRACT

Power chain is a fixed orthodontic material with polyurethane elastomers based. The constituent polymers were low molecular weight polymers which form a cross link so the power chain can return to its original shape (shape memory) and its original size (elastic memory). When a tensile load received, the bond was unstable, then the substance undergo a permanent deformation which caused the power chain to experience a decrease in force. These bonds can also be hydrolyzed if the power chain get contact with liquids, like a mouthwash. This study aimed to determine the effect of immersing propolis mouthwash on force decay of orthodontic power chain.

The design used for this study was true laboratory experimental with pre-test post-test control group design by dividing 2 sample groups with 8 samples each group. The control group (immersed in artificial saliva) and the treatment group (immersed in propolis mouthwash) were incubated at 37° C for 28 minutes. The force decay was measured by universal testing machine.

The result showed the mean of force decay were 1.30 N for control group and 1.10 N for treatment group, while the Independent T-test obtained p = 0.040, which means that there was a significant difference in force decay.

It can be concluded that the force decay mean of power chain immersed in propolis mouthwash was smaller than the power chain immersed in artificial saliva. In addition, there were also significant differences in force decay between the two groups.

Keywords: Power chain, force decay, propolis mouthwash.