INTISARI

Elastomeric chain adalah salah satu komponen dalam peranti ortodonti cekat untuk menutup celah atau ruang diantara gigi. Komponen ini memiliki sifat mekanik (elastisitas dan kekuatan tarik) yang dapat berubah akibat keadaan lingkungan rongga mulut seperti saliva, pH, suhu, dan waktu penggunaan, sehingga memengaruhi kestabilan gaya selama penggunaan. Penelitian ini bertujuan mempelajari pengaruh lama perendaman 0, 21, 28, 42 dan 56 hari dalam saliva buatan sifat mekanik *elastomeric chain* generasi II dan *memory chain*.

Penelitian ini merupakan studi eksperimental laboratoris *in vitro* menggunakan *elastomeric chain* warna abu-abu tipe *closed chain* dari dua jenis *elastomeric chain* yaitu generasi II dan *memory chain*. Terdapat 100 sampel yang terbagi ke dalam 10 kelompok dan direndam dalam saliva buatan selama 0, 21, 28, 42 dan 56 hari. Sampel diuji menggunakan *Universal Testing Machine* (UTM). Data dianalisis menggunakan *Two Way Anova* dan dilanjutkan uji *Post Hoc*.

Hasil analisis menunjukkan bahwa lama perendaman dapat menurunkan sifat mekanik antara *elastomeric chain* generasi II dan *memory chain*. Keduanya menunjukkan perbedaan yang signifikan pada waktu pengamatan ($p < 0,05$) pada hari ke 0, 21, 28, 42 dan 56 hari. Kesimpulan penelitian adalah elastisitas *elastomeric chain memory chain* lebih baik dibandingkan generasi II. Kekuatan tarik generasi II lebih tinggi daripada *memory chain*. Kedua bahan *elastomeric chain* generasi II dan *memory chain* memiliki kekuatan tarik yang cukup baik hingga hari terakhir penelitian sehingga kedua bahan ini dapat digunakan hingga hari ke 56.

Kata kunci: *Elastomeric chain* generasi II, *Elastomeric chain memory chain*, waktu perendaman, elastisitas, kekuatan tarik

ABSTRACT

Elastomeric chains are components of fixed orthodontic appliances used to close gaps or spaces between teeth. These components possess mechanical properties (elasticity and tensile strength) that may change due to oral environmental conditions such as saliva, pH, temperature, and duration of use, thereby affecting force stability during application. This study aimed to evaluate the effect of immersion duration of 0, 21, 28, 42, and 56 days in artificial saliva on the mechanical properties of second-generation elastomeric chains and memory chains.

This study was an in vitro experimental laboratory study using gray closed-type elastomeric chains from two types of elastomeric chains, namely second-generation and memory chains. A total of 100 samples were divided into 10 groups and immersed in artificial saliva for 0, 21, 28, 42, and 56 days. The samples were tested using a Universal Testing Machine (UTM). Data were analyzed using Two-Way ANOVA followed by Post Hoc tests.

The results showed that immersion duration may reduce the mechanical properties of second-generation elastomeric chains and memory chains. Both materials demonstrated significant differences at all observation times ($p < 0.05$) on days 0, 21, 28, 42, and 56. The study concluded that the elasticity of memory chain elastomeric chains was superior to that of second-generation elastomeric chains, while the tensile strength of second-generation elastomeric chains was higher than that of memory chains. Both second-generation and memory chain elastomeric materials exhibited adequate tensile strength until the final day of the study, indicating that both materials can be used for up to 56 days.

Keywords: second-generation elastomeric chain, memory chain elastomeric chain, immersion duration, elasticity, tensile strength