

INTISARI

Termoplastik nilon adalah bahan basis gigi tiruan non logam yang memiliki sifat elastis dan tidak mudah patah. Penduduk Indonesia sebagian besar memiliki kebiasaan merokok, kandungan yang terdapat di dalam rokok salah satunya adalah fenol. Fenol merupakan zat yang dapat memengaruhi sifat mekanis termoplastik nilon seperti modulus elastisitas. Rokok di Indonesia saat ini memiliki berbagai macam jenis seperti rokok tanpa filter dan rokok elektrik. Tujuan penelitian ini untuk mengkaji pengaruh paparan asap rokok tanpa filter dan rokok elektrik terhadap modulus elastisitas basis gigi tiruan termoplastik nilon.

Jenis penelitian yang digunakan adalah eksperimental laboratoris dengan subjek penelitian termoplastik nilon berbentuk plat dengan ukuran 64x10x3,3mm terbagi menjadi 3 kelompok: dengan paparan asap rokok tanpa filter, dengan paparan asap rokok elektrik, dan kontrol. Masing-masing kelompok berjumlah 9 sampel ($n=9$). Kelompok kontrol direndam dalam akuades dan kelompok dengan perlakuan selanjutnya dipaparkan selama 21 hari. Sampel diuji modulus elastisitas menggunakan *Universal Testing Machine*. Data yang diperoleh dianalisis menggunakan ANAVA satu jalur.

Hasil penelitian menunjukkan bahwa rerata modulus elastisitas yang tertinggi dari kelompok dengan paparan asap rokok tanpa filter yaitu $219,467 \pm 60,3004$ MPa dan terendah pada kelompok kontrol yaitu $161,211 \pm 30,0529$ MPa. Hasil uji ANAVA satu jalur menunjukkan perbedaan bermakna ($p < 0,05$) pada nilai modulus elastisitas setelah diberikan perlakuan selama 21 hari. Uji *Post-Hoc* LSD terdapat perbedaan antara kelompok perlakuan. Kesimpulan penelitian ini yaitu paparan asap rokok tanpa filter dan rokok elektrik meningkatkan nilai modulus elastisitas basis gigi tiruan termoplastik nilon.

Kata kunci: Basis gigi tiruan, termoplastik nilon, rokok, modulus elastisitas

ABSTRACT

Nylon thermoplastic is a non-metallic denture base material that has elastic properties and is not easily broken. Most of Indonesian population has smoking habit, one of the contents that was contained in cigarettes is phenol. Phenol is a substance that can affect the mechanical properties of nylon thermoplastic such as modulus of elasticity. Currently, there are various types of cigarettes in Indonesia such as unfiltered cigarettes and e-cigarettes. The purpose of this present study was to analyze the effect of exposure to unfiltered cigarette smoke and e-cigarettes on modulus of elasticity of nylon thermoplastic denture base.

The study design that was used in this study is an experimental laboratory, with thermoplastic nylon in a form of plates with a size of 64x10x3.3mm was divided into 3 groups: with exposure to unfiltered cigarette smoke, with exposure to e-cigarette smoke, and control group. Each group consisted of 9 samples (n=9). The control group was immersed in distilled water and furthermore, the treatment group was exposed for 21 days. The modulus of elasticity of the samples were examined using the Universal Testing Machine. The obtained data were analyzed using one-way ANOVA.

The results of this present study showed that the highest mean of elastic modulus from the group with exposure to unfiltered cigarette smoke was 219.467 ± 60.3004 MPa, and the lowest was in the control group, which was 161.211 ± 30.0529 MPa. The results of the one-way ANOVA test showed a significant difference ($p < 0.05$) in the value of the modulus of elasticity after being given treatment for 21 days. The LSD Post-Hoc test showed differences between the treatment groups. Based on the result of this study, it can be concluded that exposure to unfiltered cigarette smoke and e-cigarettes were increased the modulus of elasticity of the nylon thermoplastic denture base.

Keywords: Denture base, nylon thermoplastic, cigarette, modulus of elasticity