

INTISARI

Resin akrilik polimerisasi panas merupakan material yang paling umum digunakan sebagai basis gigi tiruan. Ekstrak daun *peppermint* (*Mentha piperita L.*) diketahui memiliki aktivitas antibakteri dan antijamur sehingga berpotensi menjadi alternatif *denture cleanser* bahan alami yang diformulasikan dalam bentuk tablet *effervescent* agar lebih efisien. Senyawa fenol dalam ekstrak daun *peppermint* diduga dapat mengganggu stabilitas ikatan polimer resin akrilik sehingga memengaruhi kekuatan fleksuralnya. Penelitian ini bertujuan untuk menganalisis pengaruh tablet *effervescent* ekstrak daun *peppermint* (*Mentha piperita L.*) sebagai *denture cleanser* terhadap kekuatan fleksural basis resin akrilik polimerisasi panas.

Penelitian ini menggunakan 24 sampel plat resin akrilik polimerisasi panas berukuran 60 mm x 10 mm x 3 mm yang dibagi menjadi empat kelompok, yaitu perendaman dalam akuades (kontrol negatif), tablet *effervescent* ekstrak daun *peppermint* 1,25%, 2,5%, dan sodium bikarbonat (kontrol positif). Sampel direndam selama 31 jam. Pengukuran kekuatan fleksural menggunakan metode *three-point bending* dengan alat UTM. Data dianalisis menggunakan uji *One-Way ANOVA*, dilanjutkan dengan uji *Post-Hoc LSD*.

Hasil uji *One-Way ANOVA* menunjukkan terdapat perbedaan yang signifikan ($p < 0,05$) kekuatan fleksural antarkelompok akuades ($84,562 \pm 5,879$ MPa), tablet *effervescent* ekstrak daun *peppermint* 1,25% ($82,392 \pm 4,262$ MPa), 2,5% ($81,307 \pm 3,099$ MPa), dan sodium bikarbonat ($72,152 \pm 3,759$ MPa). Hasil uji *Post-Hoc LSD* menunjukkan terdapat perbedaan yang signifikan antara kelompok sodium bikarbonat dengan kelompok tablet *effervescent* ekstrak daun *peppermint* 1,25% dan 2,5%. Kesimpulan penelitian ini adalah tablet *effervescent* ekstrak daun *peppermint* konsentrasi 1,25% dan 2,5% sebagai *denture cleanser* tidak berpengaruh secara signifikan terhadap penurunan kekuatan fleksural resin akrilik polimerisasi panas.

Kata kunci: resin akrilik, *Mentha piperita L.*, tablet *effervescent*, *denture cleanser*, kekuatan fleksural

ABSTRACT

Heat-cured acrylic resin is the most commonly used material for denture bases. Peppermint leaf (*Mentha piperita* L.) extract has been reported to exhibit antibacterial and antifungal activities, making it a potential natural alternative for denture cleansers. The extract can be formulated into effervescent tablets to enhance its practicality and efficiency. However, the phenolic compounds present in peppermint leaf extract are suspected to interfere with the stability of polymer bonds in acrylic resin, thereby affecting its flexural strength. This study aimed to analyze the effect of effervescent tablets of peppermint leaf (*Mentha piperita* L.) extract as a denture cleanser on the flexural strength of heat-cured acrylic resin denture bases.

This experimental study used 24 heat-cured acrylic resin plate, each measuring 60 mm × 10 mm × 3 mm, were divided into four groups: immersion in aquadest (negative control), effervescent tablets of peppermint leaf extract with concentrations of 1,25%, 2,5%, and sodium bicarbonate (positive control). Samples were immersed for 31 hours. Flexural strength was measured using the three-point bending test with a universal testing machine (UTM). Data were statistically analyzed using One-Way ANOVA test, followed by LSD Post-Hoc test.

The results of One-Way ANOVA test showed a significant difference ($p < 0.05$) in flexural strength between the groups of aquadest (84.562 ± 5.879 MPa), effervescent tablets of peppermint leaf extract with concentrations of 1,25% (82.392 ± 4.262 MPa), 2,5% (81.307 ± 3.099 MPa), and sodium bicarbonate (72.152 ± 3.759 MPa). Post-Hoc LSD test showed significant differences between the sodium bicarbonate group and effervescent tablets of peppermint leaf extract with concentrations of 1.25% and 2.5% groups. The conclusion of this study is that effervescent tablets of peppermint leaf extract with concentrations of 1.25% and 2.5% as a denture cleanser didn't have a significant effect on reducing the flexural strength of heat-cured acrylic resin denture bases.

Keywords: acrylic resin, *Mentha piperita* L., effervescent tablets, denture cleanser, flexural strength