

INTISARI

Resin komposit *nanofiller* memiliki *filler* berukuran 1-100 nm, sehingga menghasilkan permukaan yang halus. Namun, paparan terhadap minuman asam, seperti kopi-lemon, dapat memengaruhi kekasaran permukaannya. Penelitian ini bertujuan mengetahui pengaruh lama kontak resin komposit *nanofiller* dalam minuman kopi-lemon terhadap kekasaran permukaan.

Penelitian menggunakan resin komposit *nanofiller* jenis Filtek Z350 XT, kopi arabika, dan sari lemon. Sampel berbentuk balok 5×5×2 mm (24 buah) direndam dalam akuades steril di inkubator suhu 37°C selama 24 jam, lalu direndam dalam kopi-lemon dengan pH 4,30 selama 0, 3, 5, dan 7 hari. Minuman diganti setiap harinya dan kekasaran permukaan diukur menggunakan alat *surface roughness measurement* (μm). Data dianalisis dengan ANAVA satu jalur dan uji LSD ($\alpha=0,05$).

Hasil penelitian menunjukkan peningkatan rerata kekasaran permukaan seiring bertambahnya lama perendaman: 0 hari ($0,210\pm 0,058 \mu\text{m}$), 3 hari ($0,222\pm 0,028 \mu\text{m}$), 5 hari ($0,243\pm 0,046 \mu\text{m}$), dan 7 hari ($0,307\pm 0,076 \mu\text{m}$). Analisis ANAVA satu jalur menunjukkan pengaruh yang bermakna pengaruh variasi lama kontak resin komposit *nanofiller* dalam minuman kopi-lemon terhadap kekasaran permukaan ($p<0,05$). Uji LSD menunjukkan perbedaan signifikan antara rerata kekasaran permukaan kelompok 0 hari dengan 7 hari dan 3 hari dengan 7 hari ($p<0,05$). Kesimpulannya, lama kontak resin komposit *nanofiller* dalam kopi-lemon berpengaruh terhadap peningkatan kekasaran permukaan.

Kata kunci: Resin komposit *nanofiller*, kopi-lemon, lama kontak, kekasaran permukaan.

ABSTRACT

Nanofiller composite resin contains fillers sized 1-100 nm, resulting in a smooth surface. However, exposure to acidic beverages such as coffee-lemon can affect its surface roughness. This study aims to determine the effect of contact duration of nanofiller composite resin in coffee-lemon on surface roughness.

The research utilized Filtek Z350 XT nanofiller composite resin, Arabica coffee, and lemon juice. Twenty four rectangular samples (5×5×2 mm) were immersed in sterile distilled water in an incubator at 37°C for 24 hours, followed by immersion in coffee-lemon with a pH of 4.30 for 0, 3, 5, and 7 days. The solution was replaced daily, and surface roughness was measured using a surface roughness measurement tool (μm). Data were analyzed using one-way ANOVA and LSD tests ($\alpha=0.05$).

The results showed an increase in mean surface roughness with longer immersion times: 0 days ($0.210\pm 0.058 \mu\text{m}$), 3 days ($0.222\pm 0.028 \mu\text{m}$), 5 days ($0.243\pm 0.046 \mu\text{m}$), and 7 days ($0.307\pm 0.076 \mu\text{m}$). One-way ANOVA revealed a significant effect of contact duration on surface roughness ($p<0.05$). LSD tests showed significant differences in mean surface roughness between the 0-day and 7-day groups, as well as between the 3-day and 7-day groups ($p<0.05$). In conclusion, the contact duration of nanofiller composite resin in coffee-lemon significantly influences the increase in surface roughness.

Key words: *Nanofiller composite resin, coffee-lemon, contact duration, surface roughness.*