

## INTISARI

Resin komposit *nanohybrid* memiliki sifat kekerasan permukaan sebagai indikator keberhasilan restorasi selama penggunaan klinis. Resin komposit bersifat menyerap air dan rentan terhadap pH rendah. Teh bunga rosella merupakan minuman pH rendah yang dapat memengaruhi struktur resin komposit. Tujuan penelitian ini adalah mengetahui pengaruh lama perendaman resin komposit *nanohybrid* dalam larutan teh bunga rosella terhadap kekerasan permukaan.

Penelitian ini menggunakan resin komposit *nanohybrid* (Replix-Universal, PT Hexa Dental Indonesia). Sampel berbentuk *disc* (diameter 5 mm dan tinggi 2 mm) sebanyak 24 buah. Terdapat 4 kelompok perlakuan berdasarkan lama perendaman dalam larutan teh bunga rosella: K0 (0 hari), K1 (3 hari), K2 (5 hari), K3 (7 hari). Uji kekerasan permukaan sampel dilakukan menggunakan *Vickers Hardness Tester*. Data nilai kekerasan permukaan (VHN) dianalisis menggunakan *One-Way ANOVA* diikuti *post-hoc* LSD ( $\alpha=0,05$ ).

Nilai rerata dan standar deviasi kekerasan permukaan resin komposit *nanohybrid* adalah K0:  $29,7 \pm 1,0$ , K1:  $27,0 \pm 0,5$ , K2:  $25,7 \pm 0,2$ , dan K3:  $24,8 \pm 0,6$ . Uji *One-Way ANOVA* menunjukkan terdapat pengaruh signifikan lama perendaman resin komposit *nanohybrid* dalam larutan teh bunga rosella terhadap penurunan kekerasan permukaan ( $p<0,05$ ). Uji *post-hoc* LSD<sub>0,05</sub> menunjukkan terdapat perbedaan signifikan kekerasan permukaan resin komposit *nanohybrid* antar seluruh kelompok perlakuan. Kesimpulan penelitian ini adalah lama perendaman resin komposit *nanohybrid* dalam larutan teh bunga rosella berpengaruh menurunkan kekerasan permukaan.

Kata kunci: Resin Komposit *Nanohybrid*, Teh Bunga Rosella, Lama Perendaman, Kekerasan Permukaan

## ABSTRACT

Nanohybrid composite resin has surface hardness as an indicator of restorative success during clinical use. Composite resin is water absorbent and susceptible to low pH. Roselle tea is a low-pH beverage that could affect the structure of composite resin. This study aimed to know the effect of immersion time of nanohybrid composite resin in roselle tea solution on surface hardness.

This study used a nanohybrid composite resin (Replix-Universal, PT Hexa Dental Indonesia). Twenty-four disc-shaped samples (5 mm in diameter and 2 mm in height) were prepared. The samples were divided into four treatment groups based on immersion time in roselle tea solution: K0 (0 days), K1 (3 days), K2 (5 days), and K3 (7 days). Surface hardness was measured using a Vickers Hardness Tester. Surface hardness values (VHN) were analyzed using One-Way ANOVA followed by a post-hoc LSD test ( $\alpha = 0.05$ ).

The mean values and standard deviations of surface hardness for the nanohybrid composite resin were  $29.7 \pm 1.0$  for K0,  $27.0 \pm 0.5$  for K1,  $25.7 \pm 0.2$  for K2, and  $24.8 \pm 0.6$  for K3. One-Way ANOVA showed that immersion time in roselle tea solution had a significant effect on reducing surface hardness ( $p < 0.05$ ). The post hoc LSD<sub>0,05</sub> test showed significant differences in surface hardness among all treatment groups. The conclusion of this study is that a longer immersion of nanohybrid composite resin in roselle tea solution reduces the surface hardness.

**Keywords:** Nanohybrid Composite Resin, Roselle Tea, Immersion Time, Surface Hardness