

## INTISARI

**Latar Belakang:** Minuman berkarbonasi akhir ini banyak diminati oleh anak-anak, padahal minuman ini bersifat asam yang dapat menyebabkan erosi gigi. Email gigi desidui memiliki perbedaan struktur dan morfologi dibandingkan dengan gigi permanen sehingga lebih rentan terhadap erosi. Cangkang kerang hijau memiliki kandungan kalsium karbonat yang tinggi sehingga dapat dijadikan sebagai hidroksiapatit sintesis sehingga menutup mikroporositas dan remineralisasi email gigi desidui. **Tujuan:** Mengkaji pengaruh aplikasi gel ekstrak cangkang kerang hijau terhadap kekerasan mikro dan kekasaran email gigi desidui setelah perendaman minuman berkarbonasi. **Metode:** Subyek penelitian ini menggunakan 25 gigi desidui anterior rahang bawah, terbagi kedalam 5 kelompok penelitian, yaitu kelompok kontrol negatif dengan basis gel (K1), kontrol positif dengan CPP-ACP (K2), kelompok gel ekstrak cangkang kerang hijau 5% (P1), 10% (P2) dan 20% (P3). Setiap sampel dilakukan perlakuan selama 21 hari dan dilakukan perendaman minuman berkarbonasi pada hari ke-1, ke-8, dan ke-15; kemudian diukur kekerasan mikro menggunakan *Vickers Hardness Tester* dan kekasaran menggunakan *Roughness Tester*. Analisis data dilakukan menggunakan *one way ANOVA*. **Hasil:** Hasil analisis menunjukkan perbedaan signifikan pada masing-masing kelompok penelitian, baik pada pengujian kekerasan mikro dan kekasaran. Hasil tertinggi kekerasan mikro terdapat pada kelompok P3 dengan rerata  $222,72 \pm 2,10$ . Hasil terendah pada uji kekasaran terdapat pada kelompok P3 dengan rerata  $0,35 \pm 0,01$ . **Kesimpulan:** Gel ekstrak cangkang kerang hijau konsentrasi 20% menghasilkan kekerasan mikro paling tinggi dan kekasaran paling rendah dibanding konsentrasi 5% dan 10% serta CPP-ACP pada email gigi desidui setelah perendaman minuman berkarbonasi.

**Kata kunci:** gigi desidui, erosi gigi, remineralisasi gigi, cangkang kerang hijau, kekerasan mikro dan kekasaran email.

## ABSTRACT

**Background:** Carbonated beverages are currently consumed by a significant number of children, despite the acidic properties of these drinks which can lead to tooth erosion. The deciduous tooth enamel is more susceptible to erosion due to its differences in structural and morphological composition compared to the permanent teeth. Green mussel shells have a high calcium carbonate content, which enables them to be used as synthetic hydroxyapatite to repair microporosity and remineralize deciduous tooth enamel. **Objective:** To investigate the effect of green mussel shell extract gel application on the microhardness and roughness of deciduous tooth enamel following immersion in carbonated beverages. **Methods:** A total of 25 anterior mandibular deciduous teeth were used in this study, which was divided into five groups. These were designated as the negative control group with gel base (K1), the positive control with CPP-ACP (K2), the green mussel shell extract gel group with 5% (P1), 10% (P2) and 20% (P3) concentrations. Each sample was treated for 21 days and immersed in carbonated beverages on days 1, 8, and 15. Thereafter, microhardness was measured using a Vickers Hardness Tester and roughness using a Roughness Tester. Data analysis was performed using one-way ANOVA. **Results:** The results demonstrated significant differences between the study groups in both microhardness and roughness testing. The highest result of microhardness was observed in group P3, with a mean of  $222.72 \pm 2.10$ . The lowest result in the roughness test was observed in group P3, with a mean of  $0.35 \pm 0.01$ . **Conclusion:** The green mussel shell extract gel at a concentration of 20% exhibited the highest microhardness and lowest roughness when compared to the 5% and 10% concentrations, even CPP-ACP on deciduous tooth enamel following immersion in a carbonated beverage.

**Keywords:** deciduous teeth, dental erosion, tooth remineralization, green mussel shells, email micro-hardness and roughness.