INTISARI

Penggunaan obat kumur merupakan salah satu upaya untuk menjaga kesehatan rongga mulut secara mekanis pasien ortodonti. Obat kumur dengan kandungan etnaol dan nonetanol dapat menurunkan kekuatan geser braket keramik. *Pretreatment* saat proses etsa, seperti deproteinase menggunakan bromelin dapat memicu peningkatan kekuatan geser. Penelitian bertujuan menganalisis pengaruh aplikasi bromelin terhadap kekuatan geser braket keramil pada simulasi perendaman obat kumur etanol dan nonetanol.

Penelitian menggunakan 30 gigi premolar rahang atas dibagi 6 kelompok, yaitu: kelompok kontrol – saliva, kontrol – nonetanol, kontrol – etanol, bromelin 10% – saliva, bromelin 10% – nonetanol, dan bromelin 10% – etanol. Aplikasi bromelin dilakukan selama 60 detik sebelum etsa dilanjutkan dengan pemasangan braket keramik menggunakan bahan adhesif resin komposit. Semua sampel direndam dalam larutan perendaman sesuai kelompok selama 24 jam. Pengujian kekuatan geser menggunakan *Universal Testing Machine* dengan *load* 1 mm/menit dilanjutkan pengamatan skor *Adhesive Remnant Index* (ARI). Kekuatan geser dianalisis dengan *two-way ANOVA* dilanjutkan dengan *post-hoc Tukey*. Skor ARI dianalisis dengan *Scheirer-Ray Hare.*

Hasil penelitian menunjukkan kekuatan geser kelompok bromelin 10% – saliva (10,74 ± 0,46 MPa) memiliki nilai tertinggi dibanding kelomprok bromelin – nonetanol (8,41 ± 0,42 MPa) dan kelompok bromelin – etanol (7,21 ± 0,75 MPa). Rerata kekuatan geser kelompok bromelin (7,21 ± 0,75 MPa – 10,74 ± 0,46 MPa) lebih tinggi dibanding kelompok kontrol (5,66 ± 0,31 MPa – 8,17 ± 0,26 MPa). Skor ARI menunjukkan tidak ada perbedaan yang bermakna. Kesimpulan penelitian bromelin meningkatkan kekuatan geser braket keramik pada simulasi perendaman obat kumur etanol dan nonetanol serta tidak mempengaruhi skor ARI.

Kata kunci: deproteinase, bromelin, obat kumur, braket keramik, kekuatan geser

ABSTRACT

The use of mouthwash is one of the mechanical efforts to maintain oral health in orthodontic patients. Mouthwashes containing ethanol and non-ethanol agents have been shown to reduce the shear bond strength of ceramic brackets. Pretreatment during the etching process, such as deproteinization using bromelain, may enhance bond strength. This study aimed to analyze the effect of bromelain application on the shear bond strength of ceramic brackets under ethanol and non-ethanol mouthwash immersion simulation.

Thirty extracted maxillary premolars were divided into six groups: control–saliva, control–non-ethanol, control–ethanol, 10% bromelain–saliva, 10% bromelain–non-ethanol, and 10% bromelain–ethanol. Bromelain was applied for 60 seconds prior to etching, followed by bonding of ceramic brackets using resin composite adhesive. All samples were immersed in their respective solutions for 24 hours. Shear bond strength was tested using a Universal Testing Machine at a crosshead speed of 1 mm/min. Adhesive Remnant Index (ARI) scores were then recorded. Data were analyzed using two-way ANOVA followed by Tukey post-hoc test for shear bond strength, and Scheirer-Ray Hare test for ARI.

The 10% bromelain–saliva group demonstrated the highest shear bond strength (10.74 ± 0.46 MPa) compared to the 10% bromelain–non-ethanol (8.41 ± 0.42 MPa) and 10% bromelain–ethanol (7.21 ± 0.75 MPa) groups. Overall, bromelain-treated groups (7.21–10.74 MPa) showed higher bond strength than control groups (5.66–8.17 MPa). No significant differences were observed in ARI scores. The conclusion of this study is that bromelain pretreatment increases the shear bond strength of ceramic brackets under ethanol and non-ethanol mouthwash simulation without significantly affecting ARI scores.

Keywords: deproteinization, bromelain, mouthwash, ceramic brackets, shear bond strength