Kuat Tekan Material Restoratif Bioaktif pada Saliva Buatan dengan Perbedaan pH = Compressive Strength of Bioactive Restorative Materials in Artificial Saliva with pH Difference

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Abstrak

Latar Belakang: Saat ini, material restoratif bioaktif Giomer, komposit resin alkasit, dan semen ionomer kaca modifikasi resin (SIKMR) telah digunakan dalam praktik kedokteran gigi. Dalam rongga mulut, material restoratif bioaktif akan menahan gaya dari pengunyahan dan menghadapi perubahan pH. Oleh karena itu, dilakukan penelitian mengenai pengaruh pH saliva buatan terhadap kuat tekan material restoratif bioaktif. Tujuan: Penelitian ini bertujuan untuk mengetahui perbedaan nilai kuat tekan lima material restoratif bioaktif setelah perendaman dalam saliva buatan dengan pH 7 dan 4,5. Metode: Lima kelompok material digunakan dalam penelitian ini: Giomer Beautifil II LS, Zirconomer Improved, Cention N, Activa Bioactive Restorative, dan Fuji II LC Capsule. Dua belas spesimen berbentuk silinder dengan diameter 4 mm dan tinggi 6 mm dari tiap material dibagi menjadi dua kelompok perlakuan, yaitu perendaman dalam saliva buatan pH 7 dan 4,5 selama 7 hari. Spesimen diuji menggunakan Universal Testing Machine (Shimadzu AGS-X 5kN, Japan) dengan crosshead speed 0,5 mm/menit. Hasil: Hasil uji statistik menunjukkan hanya Activa Bioactive Restorative yang memiliki nilai kuat tekan setelah perendaman dalam saliva buatan pH 4,5 lebih rendah secara bermakna dari pH 7. Kesimpulan: Nilai kuat tekan material restoratif bioaktif Giomer, komposit resin alkasit, dan SIKMR secara umum tidak lebih rendah dalam saliva buatan pH 4,5 dibanding dengan pH 7.

.....Background: Currently, bioactive restorative materials of Giomer, alkasite composite resin, and resin modified glass ionomer cement (RMGIC) are being used in dental practice. In the oral cavity, bioactive restorative materials will resist the load from mastication and face changes in pH. Therefore, a study on the effect of pH of artificial saliva on the compressive strength of bioactive restorative materials was conducted. Objective: This study aims to determine the differences in the compressive strength of five bioactive restorative materials after immersion in artificial saliva with a pH of 7 and 4.5. Methods: Five groups of materials were used in this study: Giomer Beautifil II LS, Zirconomer Improved, Cention N, Activa Bioactive Restorative, and Fuji II LC Capsule. Twelve cylindrical specimens with a diameter of 4 mm and a height of 6 mm of each material were divided into two groups, namely immersion in artificial saliva with a pH of 7 and 4.5 for 7 days. The specimens were tested using a Universal Testing Machine (Shimadzu AGS-X 5kN, Japan) with a crosshead speed of 0.5 mm/minute. Result:. Statistical tests showed that only Activa Bioactive Restorative had a compressive strength value after immersion in artificial saliva with a pH of 4.5 was significantly lower than pH of 7. Conclusion: The compressive strength values of bioactive restorative materials of Giomer, alkasite composite resin, and RMGIC were generally not lower in artificial saliva with a pH of 4.5 than in pH of 7.