

Pharmacogn J. 2024; 16(2): 442-449

A Multifaceted Journal in the field of Natural Products and Pharmacognosy
www.phcogj.com

Research Article

An *in Vitro* Comparative Evaluation for Internal and Marginal Integrity and the Degree of Monomer Conversion of Alkasite Restorative Material

ABSTRACT

Aims: To compare and evaluate marginal and internal adaptation and to assess the degree of conversion of alkasite restoration in relation with other restorative materials. **Methods:** on the buccal surface of 25 maxillary premolars a class V cavities were prepared. The teeth were randomly divided into five groups (n=5) that restored as: Group 1: alkasite without adhesive, Group 2: alkasite with adhesive, Group 3: Nanohybrid composite, Group 4: Glass ionomer cement, and Group 5: Resin modified glass ionomer cement. The teeth underwent 5000 cycles of thermocycling between 5° and 55°. Then, silver nitrate solution was infiltrated and Micro-Computed tomography analysis was performed using (LOTUS inVivo). For evaluating degree of conversion, 15 specimens in the form of a disc were prepared from Alkasite, nanohybrid composite and resin modified glass ionomer (n=5). All samples were analyzed using (FTIR) in an ATR Mode in three intervals (after 20 second, 24 hours and 7 days). The data had been analyzed using the Kruskal-Wallis, Dune and Wilcoxon tests at a 0.05 significance level. **Result:** A significant difference in marginal and internal adaptation were observed among restorations ($p < 0.05$). Superior marginal and internal adaptation was obtained in this study for alkasite whether with or without bonded over nanohybrid composite. However, RMGIC and GIC show more adaptation values among other tested groups. Also degree of monomer conversion percentage varied among restorations at different intervals. **Conclusion:** alkasite restorations wither with or without bonding have higher marginal and internal adaptation in comparison with nanohybrid composite but lower than that of GIC and RMGIC. Also alkasite restoration showed higher degree of conversion when compared with nanohybride composite and RMGIC after 20 second and 24 hours of polymerization