عنوان مقاله:

Lithium Substitution Glass Composition Used in Glass Ionomer Cement: Physiochemical Properties in Artificial Saliva

محل انتشار:

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خلاصه مقاله:

In this study, glasses with 41.6 SiO2, 28.5 Al2O3, 15.5 CaF2, 3.7 AlPO4, 1.5 AlF3, (9.2-X) NaF, and X LiF (X= 0, 3, 6, and 9.2) compositions were prepared. Fourier Transform Infrared Spectroscopy (FTIR) showed the red shift of Si-O-Si vibration mode by Lithium substitutions. According to the results of Differential Thermal Analysis (DTA), ΔTg = 60 ºC was proved by the lithium substitution. Field Emission Scanning Electron Microscopy (FESEM), antibacterial property, glass solubility in Artificial Saliva (AS), and pH variation in AS by dissolution were measured. Following the initial substitution of lithium, the glass density was reduced from 2.62 to 2.40 g/cm3, whereas in the 6 wt. % Li concentration, the high field strength played the main role and the density increased from 2.40 to 2.58 g/cm3. In artificial saliva with basic pH, the durability of Li bearing glasses increased and the degradation rate decreased. Durability decreased in the acidic environment. By increasing the Li substitution, the antimicrobial property of the cement was enhanced.

کلمات کلیدی:

Glass ionomer, cement, Lithium, Antibacterial property, Sodium