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Two simple methods for surface modification of lithium disilicate dental blocks with hydroxyapatite

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Abstract

Crowns are materials that attracting the attention and lithium disilicates among them widely used because of their high bulk mechanical features. Increasing the bioactivity of crowns has generally been a common aspect of all studies. In this study, lithium disilicate dental blocks were coated with bioactive calcium– phosphate components using sol–gel dip–coating methods to increase their surface bioactivity. Two coating methods called as slurry and powder methods were proposed to obtain dense and remarkable layer on the lithium disilicate substrates. The coating layers were characterized by scanning electron microscopy attached with energy dispersive spectroscopy. Coating procedures have successfully accomplished and show enhanced surface properties with terms of calcium/phosphate ratios. Tri–calcium phosphate obtained by the slurry method, which has 1.5 calcium/phosphate ratio, is a favorable structure for bio–absorbable. However, the powder method has approximately 1.67 calcium/phosphate ratio which necessary for hydroxyapatite (HA) structure for higher crystallinity and lower solubility properties.

Author Keywords

Lithium Disilicate, Calcium Phosphates, Dental Block, Sol–gel, Coating

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