

عنوان مقاله:

Effects of N-Vinylcaprolactam Containing Polyacids and Zirconia on Mechanical Properties of Commercial Glass Ionomer Cements

محل انتشار:

مجله مواد و تکنیک های دندانپزشکی، دوره 9، شماره 1 (سال: 1399)

تعداد صفحات اصل مقاله: 8

نویسندگان:

shabnam aslani - iran university of science and technology

hamidreza rezaie - iran university of science and technology

alireza khavandi - iran university of science and technology

خلاصه مقاله:

This study aimed to investigate the impact of N-vinylcaprolactam (NVC) and Nano-sized yttria-stabilized zirconia (YSZ), separately and simultaneously, on the mechanical properties of the commercial glass ionomer cements (GICs). Methods: The NVC is able to ameliorate the mechanical and surface properties of glass ionomers; however, its effect hasn't been investigated in conjunction with zirconia yet. In order to perform the current research, the liquid of glass ionomer was synthesized by adding the NVC to its copolymer and then was characterized by proton nuclear magnetic resonance and Fourier transforms infrared. In addition, Nano-sized YSZ was added to the powder of glass ionomer and then was characterized by scanning electron microscopy. Afterward, the specimens for both flexural strength (FS) and microhardness were prepared by mixing the powder and liquid of the modified glass ionomer. Eventually, the aforementioned properties were evaluated after 24 h and 1 week of immersion in distilled water in an incubator. Furthermore, the one-way analysis of variance was used to study the statistical significance of FS. Results: The obtained results demonstrated that microhardness and FS properties of the glass ionomer were clearly improved as zirconia and NVC were added to the powder and liquid of the glass ionomer, respectively ($P < 0.05$). Moreover, the best result was achieved for the group in which the modification of powder and liquid of glass ionomer occurred concurrently. Conclusion: Based on the findings of the present study, it was deduced that the modified GIC is a promising dental material with improved mechanical properties.

کلمات کلیدی:

microhardness, Glass Ionomer, Flexural strength, N-vinylcaprolactam (NVC), Zirconia

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1032229>

