ACRYLIC MATERIAL CHARACTERIZATION INCORPORATING CHITOSAN-CHONDROITIN SULFATE NANOPARTICLES

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INTRODUCTION: Chitosan is the second most abundant polymer in nature. By its properties, mainly antimicrobial, it is widely used in the pharmaceutical and biomedical industry; however in dentistry it is still not as widespread use.

PURPOSE: The purpose of this study was to determine and compare physical and mechanical properties of acrylic materials, incorporating chitosan-chondroitin sulfate nanoparticles.

MATERIAL AND METHODS: Two types of acrylic were included: cold cure acrylic and heat cure acrylic. Tests were conducted according with the American Dental Association specification no. 12 for denture base polymer; specimens were fabricated with dimensions of 64±0.1 x 10±0.1 x 2.5±0.1 mm of each material following the manufacturers instructions. Subsequently chitosan-chondroitin sulfate nanoparticles were synthesized, which were incorporated into the specimens. The following properties were determined: surface roughness, Vickers hardness, strength and flexural modulus and fracture toughness.

RESULTS: Means and standard deviation are reported. When analyzing the data significant differences between the groups were observed. Presenting the heat cure acrylic significantly higher values in all tests except the roughness of the surface.

CONCLUSIONS: Heat cure acrylic presented significantly higher properties compared to the cold cure acrylic.

Keywords: Dental acrylic, Characterization, Nanoparticles

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