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Abstract


[BINDO, Márcio José Fraxino](#) et al. Study of the surface hardness and modulus of elasticity of conventional and microwave-cured acrylic resins. *Braz. oral res.* [online]. 2009, vol.23, n.1, pp. 68-75. ISSN . doi: 10.1590/S1806-83242009000100012.

The aim of this study was to evaluate the following acrylic resins: Clássico[®], QC-20[®] and Lucitone[®], recommended specifically for thermal polymerization, and Acron MC[®] and VIPI-WAVE[®], made for polymerization by microwave energy. The resins were evaluated regarding their surface nanohardness and modulus of elasticity, while varying the polymerization time recommended by the manufacturer. They were also compared as to the presence of water absorbed by the samples. The technique used was nanoindentation, using the Nano Indenter XP[®], MTS. According to an intra-group analysis, when using the polymerization time recommended by the manufacturer, a variation of 0.14 to 0.23 GPa for nanohardness and 2.61 to 3.73 GPa for modulus of elasticity was observed for the thermally polymerized resins. The variation for the resins made for polymerization by microwave energy was 0.15 to 0.22 GPa for nanohardness and 2.94 to 3.73 GPa for modulus of elasticity. The conclusion was that the Classico[®] resin presented higher nanohardness and higher modulus of elasticity values when compared to those of the same group, while Acron MC[®] presented the highest values for the same characteristics when compared to those of the same group. The water absorption evaluation showed that all the thermal polymerization resins, except for Lucitone[®], presented significant nanohardness differences when submitted to dehydration or rehydration, while only Acron MC[®] presented no significant differences when submitted to a double polymerization time. Regarding the modulus of elasticity, it was observed that all the tested materials and products, except for Lucitone[®], showed a significant increase in modulus of elasticity when submitted to a lack of hydration.

Keywords : Denture, complete; Polymethyl methacrylate; Hardness; Elasticity.

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Sociedade Brasileira de Pesquisa Odontológica

Av. Lineu Prestes, 2227
Caixa Postal 8216
05508-900 São Paulo SP - Brazil
Tel./Fax: +55 11 3091-7810



bor@sbpgo.org.br