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**In vitro Cytotoxicity of Glass and Carbon Fiber-Reinforced Heat-Polymerized Acrylic Resin Denture Base Material**

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**Abstract:** Acrylic resin dentures may have cytotoxic effects on oral tissues. However, there is sparse data about the cytotoxic effect of fiber-reinforced acrylic resin materials. The aim of this in vitro study was to determine the cytotoxicity of a heat-polymerized acrylic resin denture base material reinforced with glass, carbon fibers and unreinforced acrylic resin denture base material. 100 acrylic resin discs were assigned to 5 experimental groups (n=20) and 1 control group. Group NOF did not receive any fiber. Roving type glass (Vetrolex) and carbon fibers (Type Tenox J) were introduced into the acrylic resin specimens of Group RGF and Group RCF with the "embedding" technique. Particulate glass and carbon fibers were impregnated into the specimens of Group PGF and PCF with the "blending" technique. Gingival fibroblast cells were exposed onto the test specimens and the cytotoxicity was determined by succinic dehydrogenase activity (MTT method) after 24 and 72 hours incubation. Data were analyzed with the 1-way-Anova test. Cell proliferation rates after 24 and 72 hours incubation ranged as follows: NOF (89%-83%)> RGF (80%-77%), PGF (80%-76%), RCF (79%-75%), PCF (77%-73%). All groups displayed significant cytotoxicity compared to control cell culture. Fiber reinforced groups were significantly more cytotoxic than the unreinforced group. No significant difference of cytotoxicity was found between the fiber-reinforced groups.

**Key Words:** Cytotoxicity, denture base materials, glass fiber, carbon fiber, cell culture

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