Cytotoxicity of four types of resins used for removable denture bases: in vitro comparative analysis.

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Melilli D¹, Currò G, Perna AM, Cassaro A.

Author information

¹Department of Oral Sciences, University of Palermo, Palermo, Italy.

AIM:

The aim of this paper was to compare the cytotoxicity of four types of resins used for manufacturing denture bases.

METHODS: Nine disk-shaped samples of four resin (two heat-polymerized, one auto-polymerized, and one light-polymerized), 9 samples of glass (negative control) and 9 samples of lead (positive control) were made according to the manufacturer instructions. The materials were tested by contact with BALB/C 3T3 fibroblast cells. Each sample was tested after 24, 48 and 72 hours. The cellular vitality was verified through spectrophotometric analysis of the solution where the colour is directly related to the amount of metabolically active and living cells. The results were analyzed through the one way variance analysis (ANOVA) in order to evaluate significant differences in the behaviour of the resins at 24, 48 and 72 hours. When a significant difference was present, the Games/Howell test for multiple comparisons was used. The significativity level was fixed at P<or=0.05.

RESULTS: The autopolymerized resin showed the lowest values of cellular vitality (57%) during the first 24 hours, similar to the positive controls (lead) (P>0.05). The light-polymerized resin and the negative control (glass) were so compatible with the cellular carpet that all their values did not show statistically significant differences in any of the three periods of time considered (p>0.05), and their cellular vitality values almost reached the 100%.

CONCLUSIONS: The autopolymerized resin showed the major cytotoxicity; the light-polymerized resin, instead, showed an optimal biocompatibility due to the absence of free monomer from its chemical composition.