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Original Articles

Cytotoxicity of Silver Solder Employed in Orthodontics

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Abstract

Objective: To test the null hypothesis that the silver soldering employed in orthodontics is not cytotoxic for fibroblasts.

Materials and Methods: This in vitro study was performed using a culture of mice fibroblasts (lineage NIH/3T3), divided into four groups (n = 10 each): control, negative control (stainless steel archwire), positive control (amalgam disks), and test group (silver soldering). After cell culture in complete Dulbecco modified eagle medium and achievement of confluence in 80%, the suspension was added to the plates of 24 wells containing the specimens and incubated in an oven at 37°C for 24 hours. The plates were analyzed on an inverted light microscope, photomicrographs were obtained, and the results were recorded as response rates based on modifications of the parameters of Stanford according to the size of the diffusion halo of the toxic substance and quantity of cell lysis.

Results: The results revealed a maximum response rate for the silver soldering group, as well as severe inhibition of cell proliferation and growth, more round cells with mostly darkened and granular aspects, suggesting lysis with cell death. A similar response was seen in the positive control group.

Conclusion: The hypothesis is rejected. The silver soldering used in orthodontics represents a highly cytotoxic material for the cells analyzed.

Keywords: Cytotoxicity, Silver soldering, Orthodontics

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