

Cytotoxicity and anti-biofilm properties of novel hybrid-glass-based caries infiltrant

Autorzy

Ivana Nedeljkovic
Behrouz Zandieh Doulabi
Marwa Abdelaziz
Albert J. Feilzer
Rob A. M. Exterkate
Sławomir Szafert
Nurbey Gulia
Ivo Krejci
Cornelis J. Kleverlaan

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To assess the cytotoxicity of an experimental hybrid-glass-based infiltrant and its effect on biofilm attachment, growth and metabolic activity, and to compare it to the resin-based infiltrant Icon. Cytotoxicity of hybrid-glass-based material (**EXP**) and resin-based infiltrant Icon (**Icon**) was tested in direct contact tests on freshly cured (**direct_mat**) and on materials kept for 24 h in cell culture medium (**direct_exmat**), and extract test with materials 24-h extracts (**extract**). Cell viability of L929 mouse fibroblast cell line was measured with MTT assay, according to ISO10993–5:2009. Biofilm attachment (5 h), growth (24 h and 48 h) and lactic-acid production (24 h and 48 h) on glass-disk specimens coated with **EXP** or **Icon**, or uncoated (**control**), were assessed using a microcosm biofilm model and Amsterdam Active Attachment system. At indicated time points, biofilms were harvested, plated, and CFU counts were determined, while lactic-acid production was measured colorimetrically. Cell viability reduction by EXP was below 30%-threshold in direct contact tests, while in extract test an increased cell viability was observed. Icon reduced cell viability substantially in all three tests. Significantly less bacteria attached to the surface of EXP after 5 h compared to Icon and control. Biofilm growth was significantly lower on EXP than on Icon and control after 24 h, but this difference was smaller and statistically insignificant after 48 h. There was no difference in lactic-acid production among groups.

Słowa kluczowe

Cytotoxicity, Biocompatibility, Biofilm growth, Resin infiltration, Icon, Hybrid glass, Proximal caries, White spot lesions

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