50th International conference on
Prosthodontics & Restorative
November 17-18, 2025 | Paris, France

Cytotoxicity and proliferation effects of cold ceramic on stem cells from human exfoliated deciduous teeth compared to MTA: an *in vitro* study

Neda Mozaffari
Shahid Beheshti University of Medical Sciences, Tehran, Iran

Background: This study aimed to assess the cytotoxicity and proliferation effects of cold ceramic (CC) on stem cells from human exfoliated deciduous teeth (SHEDs) compared to mineral trioxide aggregate (MTA). Methods: In this in vitro study, the cytotoxicity of fresh and set MTA and CC for SHEDs was assessed after 24 and 72 hours using the methyl thiazolyl tetrazolium (MTT) assay. The scratch test was used to evaluate cell migration, while cell morphology and adhesion were assessed by scanning electron microscopy (SEM). Data were analyzed by one-way ANOVA and Tukey test (α=0.05). Results: At 24 hours, cell viability was higher in fresh MTA than fresh CC (P<0.0001), and higher in set CC than set MTA (P=0.0003). At 72 hours, cell viability in the presence of both fresh and set MTA was similar to the control group (P=0.871). Set CC showed significantly higher cell viability (P<0.0001), while fresh CC decreased cell viability. Scratch test showed complete healing in the control group. Cell density was lower in the MTA group, and lowest in the CC group. SHEDs preserved their natural morphology and exhibited optimal cytoplasmic attachment to MTA and CC surfaces after 24 and 48 hours. Conclusion: Cell viability and migration in CC were comparable to MTA and even superior in the set form after 72 hours. CC promoted cell proliferation in addition to migration. Cells maintained normal morphology and optimal adhesion in both groups. CC may be a suitable alternative to MTA for pulpotomy of primary teeth.

Biography

Dr. Neda Mozaffari is an Assistant Professor at Kermanshah University of Medical Sciences and a board-certified specialist in Pediatric Dentistry. She has extensive experience in clinical practice, teaching, and research in pediatric oral health. Dr. Mozaffari is an active member of the Iranian Association of Pediatric Dentistry. Her professional interests include preventive dentistry, behavior management, and oral health promotion for children. She is dedicated to advancing pediatric dental care through evidence-based approaches and community health initiatives.