

## Cytotoxicity evaluation of Pro Root MTA, and Portland Cement on L929 fibroblasts

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### Abstract

**Background and Aim:** Mineral Trioxide Aggregate (MTA) is a material used in many endodontic treatments. Recently a number of studies have reported that Portland Cement (PC) and Pro Root MTA have similar physical, chemical and biological properties. The question is whether the cytotoxicity of PC is similar to MTA or it would be a toxic agent? The aim of this study was to compare the cytotoxicity of Pro Root MTA and Portland Cement on L929 mouse fibroblasts.

**Materials and Methods:** In this experimental study, extracts materials of PC and Pro Root MTA were transferred to cell culture plates containing L929 fibroblasts at mixing time (0), 4, 24 hours and 7 days after setting. Distilled water set as positive control group and cell culture mediums set as negative control group were added to cell culture plates containing L929 fibroblasts. After 24 hours incubation, cells were stained by Crystal Violet (CV), and optical density (OD) was read. Data were analyzed using Tukey HSD and one way analysis of variance.  $P \leq 0.05$  was considered as the level of significance.

**Result:** Pro Root MTA in all experimental groups and PC at 0, 4 hours after mixing had statistical significant difference with positive control group ( $P \leq 0.001$ ) and no significant difference were found between PC, MTA and negative control group in these times. PC showed statistical significant difference with negative control group, positive control group and Pro root MTA at 24 hours and 7 days after mixing. ( $P \leq 0.05$ )

**Conclusion:** Based on the findings of this study PC showed some degrees of cytotoxicity at 24 hours and 7 days after mixing.

**Keywords:** *Cell Toxicity, Pro root aggregate, Fibroblast, Mineral Trioxide aggregate, Accelerated Portland Cement*