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## The effect of double antibiotic pastes on the expression of collagen type I in dental pulp stromal cells cultured in the presence or absence of transforming growth factor $\beta$ 1(TGF $\beta$ 1) *in-vitro*

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**Aim:** The aim of this study was to investigate the effect of different double antibiotic paste (DAP) concentrations on viability and the gene expression of collagen type I in dental pulp stromal cells (DPSCs) cultured in presence or absence of TGF  $\beta$  1.

**Methods:** DPSCs between passage 6-8 were cultured *in-vitro* in the presence or absence of TGF  $\beta$ 1 growth factor and the presence or absence of two different concentrations of DAP (1.5 $\mu$ g and 25 $\mu$ g) for 3 and 7 days. Cell viability was assessed under the different culture conditions as well as in the basal negative controls at both time points using LDS assay. The gene expression of collagen type 1 under the different culture conditions was investigated using qPCR; the gene expression of all groups was normalized to the expression in DPSCs cultured under basal culture negative control. Statistical analysis was carried out using one-way analysis of variance (ANOVA) and Bonferroni's multiple comparison tests.

**Results:** DPSCs cultured in TGF  $\beta$ 1 without antibiotics showed the highest percentage of cell viability after three days. At seven days, the highest percentage of cell viability was in the group cultured with 1.5 $\mu$ g DAP. The 25 $\mu$ g and the 1.5 $\mu$ g DAP groups showed the lowest expression of collagen type I at both time points compared to their culture conditions. The highest expression of collagen type I were noticed at seven days in the 1.5 DAP+TGF  $\beta$ 1 group.

**Conclusion:** In this study we have proven that DAP at higher concentration is toxic to DPSCs and hinders their ability to synthesize collagen type I whereas, the lower DAP concentrations were less destructive to DPSCs viability and to collagen type I gene expression. However, lower antibiotic concentrations are more likely to develop microbial resistance.

### Biography

Grace Navaratnarajah is passionate about dentistry, after excelling in her final year, over 9 years ago, she has been committed to further training in different fields of dentistry. She is currently doing her master's (MclinDent in Endo) in endodontics (root canal treatment), she has excellent experience in '6 months smile' braces, a cosmetic brace system targeting adult patients. She loves all aspects of cosmetic dentistry and does regular courses to enhance her skills. Her recent endeavour is wrinkle treatment, and, cheek and lip enhancement using fillers.

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