

## Effect of Phenytoin and Cyclosporine on Connective Tissue Enzymes in Gingival Fibroblasts of Adult and Children

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**Abstract :** Introduction: Gingival overgrowth (GO) is a common side effect involving users of antiepileptic, immunosuppressive and calcium channel blocker drugs. Cyclosporine and phenytoin are amongst the most widely used drugs associated with GO. Gingival fibroblasts seem to have a significant role in the production of certain enzymes after administration of the drugs contributing to GO. Previous studies have shown a higher prevalence of GO in children and adolescents. The aim of this study was to compare normal human gingival fibroblasts with those exposed to Cyclosporine or phenytoin in measuring the production levels of certain enzymes that could have a possible role in GO. Methods: samples were obtained from the gingival biopsies of seven adult and seven children and were cultured into plates. With the growth of fibroblast cells, they were treated with or without either Cyclosporine or phenytoin. Reverse transcriptase-polymerase chain reaction (RT-PCR) was used to determine the expressed levels of R-EGF, cathepsin B,L, Lysyl oxidase, COL1, TGF  $\beta$ 1, MMP-1,2, and TIMP1. Results: according to RT-PCR analyses, the expressed levels of R-EGF, cathepsin B, L, Lysyl oxidase, COL1, TGF  $\beta$ 1, MMP-1, 2 and TIMP1 were affected by Cyclosporine and phenytoin. TGF- $\beta$ 1, TIMP, Cathepsin B and EGF showed comparable values in the adult and pediatric groups. Conclusions: Different expressed levels of enzymes after treatment of the gingival fibroblasts of adults and pediatrics with phenytoin or Cyclosporine could be the reason for the higher severity of GO in children. More studies need to be performed on the pathogenesis of GO at different age groups.

**Keywords :** cyclosporine, fibroblasts, phenytoin, gingivae

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