

TGF- β 1 INDUCES HUMAN PULP FIBROBLASTS TO EXPRESS α -SMOOTH MUSCLE ACTIN IN VITRO

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Transforming growth factor-beta 1 (TGF- β 1) has been related to induce the expression of α -smooth muscle actin (α -SMA) in fibroblasts during connective tissue repair. Since pulpal fibroblasts seem to be somewhat different from other fibroblasts, the present study investigated *in vitro* whether TGF- β 1 enhances the expression of α -SMA in human pulpal fibroblasts. TGF- β 1 was added in doses between 5-10 ng/ml to cultures of both dental pulp and gingiva human fibroblasts. The expression of α -SMA was analyzed by immunofluorescence and western blot, while the ultrastructure was evaluated by transmission electron microscopy. In addition, the immunoexpression of tenascin, osteonectin, and vimentin was also investigated. Both fibroblast types were immunoreactive for α -SMA even without TGF- β 1. When TGF- β 1 was added to cell cultures, the expression of α -SMA increased dramatically in pulpal fibroblasts independent of the concentration used. It was confirmed by the western blot analysis. Ultrastructure revealed myofilaments and indented nuclei in both fibroblasts treated with TGF- β 1. Tenascin and ONEC were only immunolabeled in pulpal fibroblasts treated or not with TGF- β 1. Both fibroblast types were positive for vimentin. The present findings showed that TGF- β 1 up-regulated the expression of α -SMA thus inducing pulpal fibroblasts to acquire the myofibroblast phenotype.

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