

Study of "Fibrillin" in Human Gingival and Periodontal Tissue

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November 1992

ABSTRACT

Fibrillin, a glycoprotein, was immunohistochemically demonstrated in conjunction with elastic fibers. These elastic fibers are widely distributed throughout the body in several types of tissues and serve to provide strength and elasticity to the tissues. Immunofluorescence study of the gingiva showed a large amount of fibrillin containing elastic fibers in the connective tissue of the gingiva. Ultrastructural study of elastic fibers in the gingiva revealed irregularly arranged microfibrils around an amorphous material core whereas these microfibrils in the periodontal membrane were arranged in parallel direction without amorphous material core. By using the monoclonal antibody specific to fibrillin which is a component of elastic fibers in various tissues, the antibody recognized the microfibrils of the fibers described as "oxytalan fibers" in the periodontal membrane. The result suggested that the microfibrils of these two types of fibers might be the same or in the same family and they also have the basic structure similar to elastic microfibrils in other tissues. Electron

microscopic study of normal human gingival fibroblasts in culture demonstrated that the cultured cells can form and secrete elastic microfibrils to the extracellular matrix. These microfibrils can aggregate to form a bundle-like structure and be recognized by the antifibrillin antibody. This result suggested that elastic microfibrils secreted by human gingival fibroblasts in culture can represent the elastic microfibrils from human tissues and this culture technique can be used as a study model for further study of elastic microfibrils.