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molecular mechanisms of skeletal mineralization

Metalloproteinases Changes in Diabetes Mellitus: Implications for Collagenous Tissues

Abstract:

Matrix metalloproteinases (MMPs) constitute a group of over 20 structurally-related proteins which include a Zn^{++} ion binding site that is essential for their proteolytic activities. These enzymes play important role in extracellular matrix turnover in order to maintain a proper balance in its synthesis and degradation. MMPs are associated to several physiological and pathophysiological processes, including Diabetes Mellitus (DM). The mechanisms of DM and its complications is subject of intense research but evidence suggests that MMPs are implicated with the development and progression of diabetic microvascular complications such as peripheral neuropathy, nephropathy, cardiomyopathy and retinopathy. Moreover, a growing body of evidence has been associated DM to changes in the collagen's structure and function, which may lead to several musculoskeletal disorders. Here, we will discuss the impact of DM-induced MMP dysregulation in the structure, biomechanics and repair process of the collagenous tissues, with special focus to the bones.

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