

Matrix metalloproteinases as regulators of periodontal inflammation

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Periodontitis are infectious diseases characterized by immune-mediated destruction of periodontal supporting tissues and tooth loss. Matrix metalloproteinases (MMPs) are key proteases involved in destructive periodontal diseases. The study and interest in MMP has been fuelled by emerging evidence demonstrating the broad spectrum of molecules that can be cleaved by them and the myriad of biological processes that they can potentially regulate. The huge complexity of MMP functions within the 'protease web' is crucial for many physiologic and pathologic processes, including immunity, inflammation, bone resorption, and wound healing. Evidence points out that MMPs assemble in activation cascades and besides their classical extracellular matrix substrates, they cleave several signalling molecules—such as cytokines, chemokines, and growth factors, among others—regulating their biological functions and/or bioavailability during periodontal diseases. In this review, we provide an overview of emerging evidence of MMPs as regulators of periodontal inflammation. © 2017 by the authors; licensee MDPI, Basel, Switzerland.

Chronic periodontitis

MMPs

Modulation

Periodontal inflammation regulation

chemokine

collagenase 3

CXCL1 chemokine

cytokine

gelatinase

gelatinase A

gelatinase B

growth factor

immunoglobulin enhancer binding protein

interleukin 10

interleukin 12

interleukin 6

matrix metalloproteinase

matrix metalloproteinase 14

myeloperoxidase

neutrophil collagenase

reactive oxygen metabolite

vasculotropin A

matrix metalloproteinase

adaptation

bioavailability

carcinogenesis

disease course

extracellular matrix

feedback system

genetic polymorphism

human

immunity

inflammation

kinetics

macrophage

osteolysis

periodontal disease

receptor down regulation

Review

signal transduction

wound healing

biological model

enzyme activation

enzymology

inflammation

metabolism

periodontal disease

Enzyme Activation

Humans

Inflammation

Matrix Metalloproteinases

Models, Biological

Periodontal Diseases

Signal Transduction