

Beta-Endorphins in Autoimmune Diseases

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Beta-endorphin is an abundant endorphin synthesized and stored in the anterior pituitary gland and its μ receptors are present on immune cells and nervous system. Autoimmune diseases are increasing now days because of psychological stress induced release of stress releasing hormones such as cortisol, adrenaline, noradrenaline, ACTH activate inflammatory mediators from inflammatory cells leads to immune modulation mediated autoimmune diseases. Beta endorphins reduces psychological stress by releasing dopamine in the central nervous system by binding to its μ receptors situated on the nervous system. Chronic psychological stress induced release of stress releasing hormones such as cortisol, ACTH, noradrenaline activate inflammatory mediators such as IL-1, TNF- α , EGF, IL-6 from chronic inflammatory cells such as macrophages, neutrophils, mast cells activate NF-Kb a key transcription factor, dysregulated NF-Kb, a key transcription factor involved in conversion of Th1 lymphocytic type to Th2 lymphocytic type release IL-4, IL-5, IL-13 and IL-

17 proinflammatory cytokines involved in immunomodulation, chronic inflammation, and tissue damage. EGF, FGF, VEGF growth factors activate NF-KB and STAT-3 transcription factors involved in cell proliferation, cell survival, and angiogenesis. Altered induced regulatory T cells (iTregs) formed from Th1 cells mediated by TGF- β release IL-10 involved in immunomodulation otherwise nTregs (Normal Regulatory T cells) involved in self-tolerance and immune homeostasis. proteolytic enzymes such as UPA (Urokinase plasminogen activator) and Mmp's 2,9 involved in extracellular matrix degradation induced tissue damage all these changes leads to autoimmune disease. Betaendorphin is an endogenous opioid involved in psychological stress reduction mediated immunomodulation by chronic inflammatory mediators leading to autoimmune disease. Betaendorphin acts as a holistic preventive and therapeutic management of autoimmune disease without adverse effects and inexpensive.

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