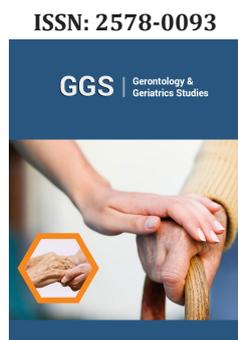


# Beta Endorphin-Healing Potential

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## Abstract

Betaendorphin is an abundant endorphin, more potent than morphine. It has got analgesic, anti-inflammatory, immunestimulatory, and stress buster activity. Betaendorphin can be used in preventive, therapeutic, health promotive and palliative management of various diseases without adverse effects and inexpensive.

**Keywords:** NF-KB; STAT-3; HPA-AXIS

## Beta-Endorphin and Its Mechanisms of Actions

Beta-endorphin is an abundant endorphin, more potent than morphine, synthesized and stored in the anterior pituitary gland; it is a precursor of POMC (Proopiomelanocortin). Endorphins are produced during yoga, pranayama, intense physical exercise creates a psychological relaxed state known as 'Runner's high', Love, tender, care, acupuncture, music therapy, dancing, singing, mindful meditation, sex, sympathy, empathy in caring the patient [1-4]. Beta-endorphin receptors are situated on the immune cells and nervous system. Beta-endorphin binds with  $\mu$  receptors situated on the peripheral nerves results in inhibition of substance P, a neurotransmitter of pain and inflammation. Beta-endorphin binds with  $\mu$  receptors situated on the central nervous system results in inhibition of GABA inhibitory neurotransmitter, produce dopamine neurotransmitter involved in analgesic activity, tranquility of mind (Stress buster activity), cognitive development, self-reward, euphoria, and addiction.

In an inflammatory state, binding of beta-endorphin to the  $\mu$  receptors situated on the peripheral nerves results in inhibition of substance p, a neurotransmitter of pain and inflammation, produce anti-inflammatory cytokines such as IL-10, IFN- $\gamma$  to reduce inflammation. Beta-endorphin receptors situated on the most innate and adaptive immune cells. Binding of beta-endorphin to the  $\mu$  receptors situated on the innate and adaptive immune cells such as neutrophils, macrophages, natural killer cells, dendritic cells, mast cells, T cells, and B cells results in inhibition of IL-1 $\beta$ , IL-6, TNF- $\alpha$  pro-inflammatory cytokines, which inhibit the activation of NF-KB a key transcription factor involved in chronic inflammation, tissue damage and activation of innate and adaptive immune cells (immune stimulatory activity) results in release of IFN- $\gamma$ , opsonin, granzyme-B, and antibodies results in anti-inflammatory activity, anti-viral activity, anti-bacterial activity, anti-tumor activity [1-8]. All these mechanisms of actions of beta-endorphin helpful for future management of diseases such as heart diseases, Alzheimer's disease, cancer, diabetes mellitus, infectious diseases, and aging without adverse effects and economical. Thorough understanding of beta-endorphin, mechanisms of actions, dose dependent duration of action needed for application in management of diseases.

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