

4 Q F D J G J D 2 V B M J U Z P G 4 F O T B U J P O % F S J W F E C

Cain JG*

Abstract

The most common type of cannabinoid is the tetra-hydrocannabinol, which is one of the major psychoactive components isolated from Cannabis sativa. Cannabinoids can bind to Gi-protein coupled cannabinoid type 1 receptors, which is highly expressed in the pre- and post-synaptic in brain and spinal cord, as well as the Gi-protein-coupled cannabinoid type 2 receptors that is predominantly located in the immune system. The activation of CB1 D Q G & % L Q K L E L W V W K H I R U P D W L R Q R I L Q W U D F H O O X O D U F \$ 0 3 K H Q F H O H D G L Q J W within the neurons.

Keywords: Cannabinoid; Pain sensation; Receptors; Neurokinin, which mediate through PLC/IP3 and DAG/PKC signalling pathways upon activation, hence resulting in its excitatory effects. CGRP is widely produced in both central and peripheral nervous systems; however, it is primarily located in the primary afferent nerves. As a direct derivative of the DRG, CGRP is found in the DH of the spinal cord and associated with the conduction of noxious stimulation. CGRP is related to the excitatory effects of SP, which results in Ca²⁺ release [3]. The receptors of CGRP are Gs-protein-coupled, which are known as calcitonin receptor-like receptor located in the nucleus accumbens, indicating that the CNS controls the CGRP-mediated pain transmission. BK is a well-known algogen and acts as one of the inflammatory mediators that are locally produced from the breakdown of high-molecular-weight kininogens in the site of the injured tissue. In the nociceptive afferent nerve fibers, BK binds to Gq-protein-coupled bradykinin receptor type B1 or bradykinin receptor type B2 receptors, leading to sensitization. The activation of B1 or B2 receptors causes activation of the PLC to break down the phosphatidylinositol 4,5-bisphosphate into IP3 and DAG, and subsequently, DAG activates the PKC, leading to the increase of Ca²⁺ conductance. Furthermore, BK can act synergistically with other algogenic substances, such as PG and NGF, to further stimulate pathways, whereas the activation of the 5-HT3 receptors induces a

Introduction

In addition, the activation of CB2 can further prevent the mast cell degranulation and the release of pro-inflammatory mediators, making the reduction in pain sensation even more drastic and effective. NE is the principal neurotransmitter of the adrenergic pathways and is synthesized from phenylalanine in the nerve terminals. Phenylalanine is converted into tyrosine and then into 3,4-dihydroxyphenylalanine by tyrosine hydroxylase. DOPA is then further converted into dopamine, which is the precursor of NE that is stored in the vesicles of the nerve terminals. The receptors of NE include α₁(α₁), α₂(α₂), α_{2A}(α_{2A}), α_{2B}(α_{2B}), α_{2C}(α_{2C}), α_{2D}(α_{2D}), α_{2E}(α_{2E}), α_{2F}(α_{2F}), α_{2G}(α_{2G}), α_{2H}(α_{2H}), α_{2I}(α_{2I}), α_{2J}(α_{2J}), α_{2K}(α_{2K}), α_{2L}(α_{2L}), α_{2M}(α_{2M}), α_{2N}(α_{2N}), α_{2O}(α_{2O}), α_{2P}(α_{2P}), α_{2Q}(α_{2Q}), α_{2R}(α_{2R}), α_{2S}(α_{2S}), α_{2T}(α_{2T}), α_{2U}(α_{2U}), α_{2V}(α_{2V}), α_{2W}(α_{2W}), α_{2X}(α_{2X}), α_{2Y}(α_{2Y}), α_{2Z}(α_{2Z}), β₁(β₁), β₂(β₂), β₃(β₃), β₄(β₄), β₅(β₅), β₆(β₆), β₇(β₇), β₈(β₈), β₉(β₉), β₁₀(β₁₀), β₁₁(β₁₁), β₁₂(β₁₂), β₁₃(β₁₃), β₁₄(β₁₄), β₁₅(β₁₅), β₁₆(β₁₆), β₁₇(β₁₇), β₁₈(β₁₈), β₁₉(β₁₉), β₂₀(β₂₀), β₂₁(β₂₁), β₂₂(β₂₂), β₂₃(β₂₃), β₂₄(β₂₄), β₂₅(β₂₅), β₂₆(β₂₆), β₂₇(β₂₇), β₂₈(β₂₈), β₂₉(β₂₉), β₃₀(β₃₀), β₃₁(β₃₁), β₃₂(β₃₂), β₃₃(β₃₃), β₃₄(β₃₄), β₃₅(β₃₅), β₃₆(β₃₆), β₃₇(β₃₇), β₃₈(β₃₈), β₃₉(β₃₉), β₄₀(β₄₀), β₄₁(β₄₁), β₄₂(β₄₂), β₄₃(β₄₃), β₄₄(β₄₄), β₄₅(β₄₅), β₄₆(β₄₆), β₄₇(β₄₇), β₄₈(β₄₈), β₄₉(β₄₉), β₅₀(β₅₀), β₅₁(β₅₁), β₅₂(β₅₂), β₅₃(β₅₃), β₅₄(β₅₄), β₅₅(β₅₅), 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β₄₇₈(β₄₇₈), β₄₇₉(β₄₇₉), β₄₈₀(β₄₈₀), β₄₈₁(β₄₈₁), β₄₈₂(β₄₈₂), β₄₈₃(β₄₈₃), β₄₈₄(β₄₈₄), β₄₈₅(β₄₈₅), β₄₈₆(β₄₈₆), β₄₈₇(β₄₈₇), β₄₈₈(β₄₈₈), β₄₈₉(β₄₈₉), β₄₉₀(β₄₉₀), β₄₉₁(β₄₉₁), β₄₉₂(β₄₉₂), β₄₉₃(β₄₉₃), β₄₉₄(β₄₉₄), β₄₉₅(β₄₉₅), β₄₉₆(β₄₉₆), β₄₉₇(β₄₉₇), β₄₉₈(β₄₉₈), β₄₉₉(β₄₉₉), β₅₀₀(β₅₀₀), β₅₀₁(β₅₀₁), β₅₀₂(β₅₀₂), β₅₀₃(β₅₀₃), β₅₀₄(β₅₀₄), β₅₀₅(β₅₀₅), β₅₀₆(β₅₀₆), β₅₀₇(β₅₀₇), β₅₀₈(β₅₀₈), β₅₀₉(β₅₀₉), β₅₁₀(β₅₁₀), β₅₁₁(β₅₁₁), β₅₁₂(β₅₁₂), β₅₁₃(β₅₁₃), β₅₁₄(β₅₁₄), β₅₁₅(β₅₁₅), β₅₁₆(β₅₁₆), β₅₁₇(β₅₁₇

