CB1R

The cannabinoid type-1 receptor (CB1 receptor) is a protein-coding gene that is part of the endocannabinoid system in the human body. It is one of the two main types of cannabinoid receptors, the other being the cannabinoid type-2 receptor (CB2 receptor). These receptors are involved in the interaction between cannabinoids, both those produced naturally within the body (endocannabinoids) and those derived from external sources (such as cannabis or marijuana).

Here are some key features of the CB1 receptor:

Location: CB1 receptors are primarily found in the central nervous system (CNS), which includes the brain and spinal cord. They are also present in some peripheral tissues.

Function: CB1 receptors play a crucial role in regulating various physiological processes, including mood, memory, pain sensation, appetite, and motor function. Activation of CB1 receptors can have both inhibitory and excitatory effects on neurotransmitter release, depending on the specific brain region and context.

Ligands: The CB1 receptor can interact with several ligands, including the body's own endocannabinoids, such as anandamide and 2-arachidonoylglycerol (2-AG), as well as external cannabinoids like delta-9-tetrahydrocannabinol (THC), the psychoactive compound in cannabis.

Effects of Activation: When CB1 receptors are activated, they can produce a range of effects, including altered perception, relaxation, increased appetite (often referred to as “the munchies”), and potential impairment of cognitive and motor functions. These effects are responsible for the psychoactive properties of cannabis.

Therapeutic Potential: Due to their involvement in various physiological processes, CB1 receptors have been explored as potential targets for therapeutic interventions. Research has examined the use of CB1 receptor agonists (compounds that activate the receptor) for pain management, appetite stimulation (e.g., in patients with cancer or HIV/AIDS), and other medical conditions. However, the psychoactive effects of CB1 receptor activation can limit their clinical utility.

Side Effects: Activation of CB1 receptors can also lead to side effects, including anxiety, paranoia, and impaired memory and cognition. These side effects are a concern for both recreational and medical cannabis users.

Regulation: CB1 receptors are tightly regulated in the body to maintain normal physiological function. Dysregulation of the endocannabinoid system, including CB1 receptor signaling, has been implicated in various neurological and psychiatric disorders.

The cannabinoid type-1 receptor has been the subject of extensive research, particularly in the context of cannabis and cannabinoids. Understanding its function and regulation has contributed to our knowledge of how these compounds affect the body and brain.

Numerous studies have shown that the endocannabinoid system, specifically the cannabinoid type-1 receptor (CB1R), plays an important role in traumatic memory. However, the effect of basolateral

amygdala (BLA) CB1R in social fear memory formation and elimination is still unclear. Here, we built a mouse model of social avoidance induced by acute social defeat stress to investigate the role of BLA CB1R in social fear memory formation and anxiety- and depression-like behavior. Anterograde knockout of CB1R in BLA neurons facilitates social fear memory formation and manifests an anxiolytic effect but does not influence sociability and social novelty. Retrograde knockout of CB1R in BLA promotes social fear memory formation and shows an anxiogenic effect but does not affect sociability and social novelty. Moreover, intracerebral injection of the CB1R antagonist AM251 in BLA during the memory reconsolidation time window eliminates social fear memory. Our findings suggest the CB1R of BLA can be used as a novel molecular target in social fear memory formation and elimination and potential PTSD therapy with memory retrieval and AM251 [1)]

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Li M, Lv X, Li T, Cui C, Yang X, Peng X, Lei J, Yang J, Ren K, Luo G, Shi Y, Yao Y, Tian B, Zhang P. Basolateral Amygdala Cannabinoid CB1 Receptor Controls Formation and Elimination of Social Fear Memory. ACS Chem Neurosci. 2023 Sep 17. doi: 10.1021/acschemneuro.3c00297. Epub ahead of print. PMID: 37718490.