

Format: Abstract

Send to

FEBS Lett. 2006 Aug 7;580(18):4337-45. Epub 2006 Jul 10.

Cannabidiol, a constituent of Cannabis sativa, modulates sleep in rats.

Murillo-Rodríguez E¹, Millán-Aldaco D, Palomero-Rivero M, Mechoulam R, Drucker-Colín R.

Author information

Abstract

Delta(9)-tetrahydrocannabinol (Delta(9)-THC) and cannabidiol (CBD) are two major constituents of Cannabis sativa. Delta(9)-THC modulates sleep, but no clear evidence on the role of CBD is available. In order to determine the effects of CBD on sleep, it was administered intracerebroventricular (icv) in a dose of 10 microg/5 microl at the beginning of either the lights-on or the lights-off period. We found that CBD administered during the lights-on period increased wakefulness (W) and decreased rapid eye movement sleep (REMS). No changes on sleep were observed during the dark phase. Icv injections of CBD (10 microg/5microl) induced an enhancement of c-Fos expression in waking-related brain areas such as hypothalamus and dorsal raphe nucleus (DRD). Microdialysis in unanesthetized rats was carried out to characterize the effects of icv administration of CBD (10 microg/5 microl) on extracellular levels of dopamine (DA) within the nucleus accumbens. CBD induced an increase in DA release. Finally, in order to test if the waking properties of CBD could be blocked by the sleep-inducing endocannabinoid anandamide (ANA), animals received ANA (10 microg/2.5 microl, icv) followed 15 min later by CBD (10 microg/2.5 microl). Results showed that the waking properties of CBD were not blocked by ANA. In conclusion, we found that CBD modulates waking via activation of neurons in the hypothalamus and DRD. Both regions are apparently involved in the generation of alertness. Also, CBD increases DA levels as measured by microdialysis and HPLC procedures. Since CBD induces alertness, it might be of therapeutic value in sleep disorders such as excessive somnolence.

PMID: 16844117 DOI: 10.1016/j.febslet.2006.04.102

[Indexed for MEDLINE] [Free full text](#)



Publication type, MeSH terms, Substances

LinkOut - more resources

Full text links



Save items

Add to Favorites

Similar articles

The nonpsychoactive Cannabis constituent cann. [Behav Neurosci. 2008]

Effects of the fatty acid amide hydrolase inhibitor URB59 [Eur J Pharmacol. 2007]

Effects on sleep and dopamine levels of microdialysis perfusion of [Life Sci. 2011]

Review Potential antipsychotic properties [World J Biol Psychiatry. 2010]

Review Multiple mechanisms involved in the [Philos Trans R Soc Lond B Biol...]

See reviews...

See all...

Cited by 11 PubMed Central articles

Patterns of medicinal cannabis use, strain analysis, [J Headache Pain. 2018]

Recent legalization of cannabis use: effects on sleep, hϵ [Nat Sci Sleep. 2017]

Role of <i>N</i>-Arachidonoyl-Serotonin (AA-5-HT) in : [Front Mol Neurosci. 2017]

See all...

Related information

Articles frequently viewed together

MedGen

PubChem Compound

PubChem Compound (MeSH Keyword)

PubChem Substance

Cited in PMC

Recent Activity

Turn Off Clear

Cannabidiol, a constituent of Cannabis sativa, modulates s PubMed

Effect of Delta-9-tetrahydrocannabinol and PubMed

Effects of acute systemic administration of cannabidiol PubMed

Cannabis, pain, and sleep: lessons from therapeutic clinical trials PubMed

Cannabis[Title] AND pain[Title] AND sleep[Title] AND lessons[Titl.. PubMed

See more...

You are here: NCBI > Literature > PubMed

Support Center

GETTING STARTED

- NCBI Education
- NCBI Help Manual
- NCBI Handbook
- Training & Tutorials
- Submit Data

RESOURCES

- Chemicals & Bioassays
- Data & Software
- DNA & RNA
- Domains & Structures
- Genes & Expression
- Genetics & Medicine
- Genomes & Maps
- Homology
- Literature
- Proteins
- Sequence Analysis
- Taxonomy
- Variation

POPULAR

- PubMed
- Bookshelf
- PubMed Central
- BLAST
- Nucleotide
- Genome
- SNP
- Gene
- Protein
- PubChem

FEATURED

- Genetic Testing Registry
- GenBank
- Reference Sequences
- Gene Expression Omnibus
- Genome Data Viewer
- Human Genome
- Mouse Genome
- Influenza Virus
- Primer-BLAST
- Sequence Read Archive

NCBI INFORMATION

- About NCBI
- Research at NCBI
- NCBI News & Blog
- NCBI FTP Site
- NCBI on Facebook
- NCBI on Twitter
- NCBI on YouTube
- Privacy Policy