Book review

Cannabinoids as Therapeutics

Edited by Raphael Mechoulam

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The endocannabinoid system comprises two known receptors (CB₁ and CB₂); a family of endogenous ligands; and specific molecular machinery for the synthesis, transport, and inactivation of CB ligands. A number of endocannabinoids have been identified, the most studied being anandamide and 2-arachidonoylglycerol. The active constituent of cannabis, Δ^9 -tetrahydrocannabinol (Δ^9 -THC) exerts many of its effects by activating CB₁ and CB₂ receptors. Cannabinoid pharmacology is a rapidly expanding field, and recent evidence points to the existence of novel targets for both endocannabinoids and phytocannabinoids. The therapeutic potential of cannabinoids is evidenced by the proliferation of recent patents on the topic, the majority of which focus on the synthesis of novel small molecules targeting the various proteins that encompass the endocannabinoid system.

Against this background, *Cannabinoids as Therapeutics* edited by Professor Raphael Mechoulam, presents a timely review of this topical area of both academic and commercial research. The book balances presentation of the historical background with basic science and clinical focus; making it both contemporary and comprehensive. It is elegantly constructed: the opening chapter covers the use of cannabis as a traditional medicine in India for thousands of years; the closing chapter brings the story sharply into contemporary focus, reviewing the progress of the newly developed natural cannabis-based medicine, Sativex®. The emerging and intriguing pharmacology of the nonpsychoactive phytocannabinoid, cannabidiol (CBD), is reviewed: whilst CBD has many and varied clinical applications, the mechanism of action of this cannabis constituent differs from that of Δ^9 -THC.

Some of the diverse clinical targets for cannabinoids are covered in dedicated chapters. Of particular note, is the chapter reviewing very recent observations indicating that the endocannabinoid system has an important role in the regulation of bone metabolism, thereby revealing that cannabinoid-related molecules may be effective novel treatments for osteoporosis. The complex pharmacology of cannabinoids in neuroprotection and neurodegeneration is also reviewed, integrating the antioxidant and anti-inflammatory actions of both phytocannabinoids and endocannabinoids; the potential use of these compounds in the treatment of major neurodegenerative disorders including Alzheimer's disease, Parkinson's disease, multiple sclerosis and Huntington's disease is explored. The antineoplastic action of Δ^9 -THC, which was first identified almost 30 years ago, has gained renewed interest of late and the most recent findings are reviewed in a chapter on the treatment of cancer. Cannabinoids as potential therapeutics in the treatment of pain, anxiety and nausea are also reviewed in detail.

It is most appropriate that the penultimate chapter of this book covers an area that represents a milestone in the long history of therapeutic cannabinoids: the Phase III clinical trials of a CB₁ receptor antagonist for the treatment of obesity. Here we see the nexus of anecdotal evidence that cannabis smokers experience 'the munchies' with the development of a novel therapeutic.

Cannabinoids as Therapeutics will be of significant interest both to those seeking a broad introduction to the field, and to those wishing to gain a more in-depth understanding of some of the most recent and exciting areas of research.

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