Editorial

Cannabinoids are substances widely spread over a variety of organisms. Their effects have been known and exploited by mankind since ancient times but only from an empirical point of view. However, nowadays, leading advances in frontier disciplines closely related such as molecular biology, synthetic chemistry and pharmacology have led to the characterization of the endogenous cannabinoid system (ECS).

The identification and cloning of two cannabinoid receptors, CB_1 and CB_2, in the early 90´s as one of the main components of the ECS, facilitated the entrance of cannabinoid research in the medicinal chemistry field, thus opening new possibilities in the design and synthesis of new cannabinoid ligands with controlled and predetermined affinities and activities.

The growing evidences which point to the importance of ECS in the regulation of a significant number of physiological processes is related with the fact that alterations in this system are involved in the development of different pathologies. This fact has converted the ECS into a promising therapeutic target for the treatment of several disorders including some of the most devastating neurodegenerative diseases such as Hungtinton´s chorea or multiple sclerosis. These reasons widely justify the growing interest of many medicinal chemistry groups in the ECS and more specifically, in the cannabinoid receptors.

This issue contains seven reviews contributed by leading experts which summarize the most relevant findings in the field of cannabinoid receptors with the objective of offering a current overview about the most important aspects in this highly dynamic area.

Firstly, a general overview of the ECS from a pharmacological and biochemical point of view is presented. In this context, Drs. J. A. Ramos, S. González, O. Sagredo, M. Gómez-Ruiz and J. Fernández-Ruiz offer a general perspective about the pharmacology of the ECS and its function in the brain. Drs. I. Díaz-Laviada and L. Ruiz-Llorente summarize the current knowledge of the signalling events produced by cannabinoids from membrane receptors to downstream regulators.

Then, the ligands of the cannabinoid receptors have been throughly reviewed. Drs. A. Makriyannis, G.A. Thakur and S.P. Nikas reviewed the more recent advances in the development of CB_1 cannabinoid receptor ligands, whereas Dr. Huffman contributed a complete overview about the most important aspects about CB_2 ligands, including a discussion about structure-activity relationship studies. In our review, we address the mutagenesis and molecular modelling approaches developed during the last years and have allowed to get deeper insights about the specific interactions responsible of binding and activation of cannabinoid receptors.

Finally, two particular involvements of cannabinoid receptors receive special attention. Dr. C. Wotjak summarizes one of the most important implications of CB_1 receptor in central nervous system regarding its interesting influence in cognition and emotionality, and Drs. F. Correa, L. Mestre, E. Molina-Holgado, A. Arévalo-Martín, F. Docagne, E. Romero, F. Molina-Holgado, J. Borrell and C. Guaza cover the interesting issue of the effects of cannabinoids on immune reactivity and on the regulation of neuroinflammatory processes asssociated with chronic inflammatory demyelinating diseases such as multiple sclerosis.

I am very grateful to all the above contributors for their excellent reviews and I hope readers will enjoy this issue, which represents deep insight and excellent understanding of the subject.

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