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Endogenous anandamide-like compounds

Raphael Mechoulam

The Hebrew University, Jerusalem

Over the last few decades research on the cannabinoids has gone through several distinct phases: 1) research on the plant cannabinoids, mostly on tetrahydrocannabinol (THC) and cannabidiol (CBD); 2) research on the endogenous cannabinoids, mostly on anandamide and 2-arachidonoyl glycerol (2-AG); and 3) research on anandamide-like endogenous fatty acid amides with amino acids and ethanol amines. Thousands of publications have been published on the plant cannabinoids and some of them are already in use as therapeutic drugs. Of particular interest is the non-psychotropic cannabinoid, CBD; it is an approved anti-epileptic drug and is being evaluated in many other therapeutic areas (for example, inflammation, cancer, bone fractures and auto-immune diseases). Similarly, cannabidiolic acid methyl ester, a stable synthetic derivative of cannabidiolic acid (CBDA), a major constituent of Cannabis sativa, proved to be effective in suppressing nausea and anxiety in rats and reducing depression-like behavior in animal models of depression. Endogenous fatty acid – amino acid amides have been shown to be of major importance in a large spectrum of biological functions and diseases. Thus, oleoyl serine, is an anti-osteoporotic molecule, anandamide and arachidonoyl serine possess antimicrobial activity against methicillin resistant *S. aureus* strains, arachidonoyl serine exerts neuroprotective effects following traumatic brain injury and oleoyl glycine prevents both nicotine conditioned place preference – an addiction animal model - and nicotine withdrawal-associated behaviors in mice and thus may possess efficacy in treating nicotine addiction. We can expect therapeutic advances in all areas.

Biography

Raphael Mechoulam (Hebrew: מֵלוּשָׁם לֶאֱפֶר, Bulgarian: Рафаел Мешулам; born 5 November 1930) is an Israeli organic chemist and professor of Medicinal Chemistry at the Hebrew University of Jerusalem in Israel. Mechoulam is best known for his work (together with Y. Gaoni, C. Trips, and S. Benezra) in the isolation, structure elucidation and total synthesis of Δ^9 -tetrahydrocannabinol, the main active principle of cannabis and for the isolation and the identification of the endogenous cannabinoids anandamide from the brain and 2-arachidonoyl glycerol (2-AG) from peripheral organs together with his students, postdocs and collaborators.

raphaelm@ekmd.huji.ac.il

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