Am J Pathol. 2012 Feb;180(2):432-42. doi: 10.1016/j.ajpath.2011.11.003. Epub 2011 Dec 5.

The endocannabinoid system and plant-derived cannabinoids in diabetes and diabetic complications.

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Abstract

Oxidative stress and inflammation play critical roles in the development of diabetes and its complications. Recent studies provided compelling evidence that the newly discovered lipid signaling system (ie, the endocannabinoid system) may significantly influence reactive oxygen species production, inflammation, and subsequent tissue injury, in addition to its well-known metabolic effects and functions. The modulation of the activity of this system holds tremendous therapeutic potential in a wide range of diseases, ranging from cancer, pain, neurodegenerative, and cardiovascular diseases to obesity and metabolic syndrome, diabetes, and diabetic complications. This review focuses on the role of the endocannabinoid system in primary diabetes and its effects on various diabetic complications, such as diabetic cardiovascular dysfunction, nephropathy, retinopathy, and neuropathy, particularly highlighting the mechanisms beyond the metabolic consequences of the activation of the endocannabinoid system. The therapeutic potential of targeting the endocannabinoid system and certain plant-derived cannabinoids, such as cannabidiol and Δ9-tetrahydrocannabivarin, which are devoid of psychotropic effects and possess potent anti-inflammatory and/or antioxidant properties, in diabetes and diabetic complications is also discussed.

PMID: 22155112 PMCID: PMC3349875 DOI: 10.1016/j.ajpath.2011.11.003

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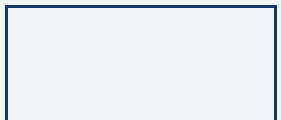

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