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Palmitoylethanolamide is a new possible pharmacological treatment for the inflammation associated with trauma

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Abstract

The endogenous fatty acid palmitoylethanolamide (PEA) is one of the members of N-acyl-ethanolamines family. PEA was identified more than five decades ago and was shown to reduce allergic reactions and inflammation in animals along with influenza symptoms in humans. Interest in this compound faded, however, until the discovery that one of its structural analogs, anandamide (arachidonoylethanolamide), serves as an endogenous ligand for cannabinoid receptors, the molecular target of Δ9-tetrahydrocannabinol in marijuana. Since this finding, PEA has been shown to inhibit peripheral inflammation and mast-cell degranulation, as well as to exert neuroprotective and antinociceptive effects in rats and mice. These actions are also mediated by PPAR-α activation and are accompanied by a decrease in nitric oxide production, neutrophil influx, and expression of proinflammatory proteins such as inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2). In addition to the hypothesis that PEA has potent immunoregulatory properties, recent data have demonstrated that PEA may also play a key role in the regulation of complex systems involved in the inflammatory response, pruritus, neurogenic and neuropathic pain. In this review, we discuss briefly the present understanding therapeutic mechanisms of PEA and the novel possible PEA clinical use for the treatment of several inflammatory diseases and trauma.