Adelmidrol, a palmitoylethanolamide analogue, as a new pharmacological treatment for the management of inflammatory pain

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Palmitoylethanolamide (PEA), an endogenous fatty acid amide belonging to the family of the*N*-acylethanolamines (NAEs) and some of its analogues, have shown great efficacy in the treatment of pain and inflammation. Adelmidrol is one of these analogues. The aim of this study was to investigate the effect of Adelmidrol on the modulation of the inflammatory response in a mouse model of collagen-induced arthritis (CIA). **Methods**: CIA was induced by an intradermally injection of 100 μl of the emulsion (containing 100 μg of bovine type II collagen (CII) and complete Freund adjuvant (CFA) at the base of the tail. On day 21, a second injection of CII in CFA was administered. Mice subjected to CIA were administered intraperitoneally with Adelmidrol (10 mg/kg). **Results:** Mice developed erosive hind-paw arthritis when immunized with CII in CFA. Macroscopic clinical evidence of CIA first appeared as periarticular erythema and edema in the hindpaws. The incidence of CIA was 100% by day 28 in the CII-challenged mice, and the severity of CIA progressed over a 35-day period with a resorption of bone. The histopathology of CIA included erosion of the cartilage at the joint. Treatment with Adelmidrol ameliorated the clinical signs at days 26 to 35 and improved histologic status in the joint and paw. The degree of oxidative and nitrosative damage was significantly reduced in Adelmidrol -treated mice, as indicated by nitrotyrosine and malondialdehyde (MDA) levels. Plasma levels of the proinflammatory cytokines and chemokines were significantly reduced by Adelmidrol treatment. **Conclusions:** We demonstrated that Adelmidrol exerts an antiinflammatory effect during chronic inflammation such as CIA.