Effect of palmitoylethanolamide in a murine model of colitis

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Although the presence of palmitoylethanolamide (PEA) in mammalian tissues has been known since the 1960s, this compound has emerged only recently as an important local pro-homeostatic mediator that, due to its chemical stability, can be also administered exogenously to exert, among others, analgesic and anti-inflammatory properties (Re et al. 2007). On the other hand, little is known about the effect of PEA in inflammatory bowel diseases (IBDs), which include ulcerative colitis and Crohn's disease, and are chronic recurrent inflammatory disorders of the intestine which affect millions of individuals (Lichtenstein et al., 2006). Here, we investigated the effect of PEA in a murine model of colitis. Colitis was induced in mice by intracolonic administration of dinitrobenzene sulphonic acid (DNBS) and inflammation was assessed by evaluating inflammatory markers/parameters (colon weight/colon length ratio and myeloperoxidase activity). A potential 'curative effect' on inflammation was tested: 1) in a first experiment, where PEA (0.1-1 mg/kg) was administered intraperitoneally (i.p.) for three consecutive days starting 24 hours after DNBS administration; and 2) in a second experiment, where PEA (0.1-1 mg/kg) was administered orally (*per os)* for three consecutive days starting 24 hours after DNBS administration. Animals were killed three days after DNBS administration. Our results show that: 1) in the first experiment PEA (i.p.) inhibited the loss of body weight induced by DNBS administration and reduced colon weight/colon length *ratio* in a dose-dependent manner; and 2) in the second experiment PEA (*per os*) inhibited the loss of body weight induced by DNBS, reduced colon weight/colon length *ratio* and myeloperoxidase activity, as well as the number of animals with diarrhea. In conclusion, these results suggest a massive curative effect of PEA in a murine model of IBD. Experiments are ongoing to establish the mechanism of action of PEA 'curative' effects in this model of colitis.

Re et al. (2007). *Vet J.* 173, 21-30.
Lichtenstein et al. (2006). *Gastroenterology.* 130, 940–87.