By Josh Sosnow, DVM (https://www.companioncbd.com/author/josh/) 26 Nov (https://www

## CANNABIDIOL AND PALMITOYLETHANOLAMIDE ARE ANTI-INFLAMMATORY IN THE ACUTELY

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Cannabidiol and palmitoylethanolamide are anti-inflammatory in the acutely inflamed human colon.

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OBJECTIVE: We sought to quantify the anti-inflammatory effects of two cannabinoid drugs, cannabidiol (CBD) and palmitoylethanolamide (PEA), in cultured cell lines and compared this effect with experimentally inflamed explant human colonic tissue. These effects were explored in acutely and chronically inflamed colon, using inflammatory bowel disease and appendicitis explants.

DESIGN: Caco-2 cells and human colonic explants collected from elective bowel cancer, inflammatory bowel disease (IBD) or acute appendicitis resections, and were treated with the following drug treatments: vehicle, an inflammatory protocol of interferon γ (IFNγ) and tumour necrosis factor α (TNFα; 10 ng/ml), inflammation and PEA (10 μM), inflammation and CBD (10 μM), and PEA or CBD alone, CBD or vehicle were added simultaneously with IFNγ. Nine intracellular signalling phosphoproteins were determined by multiplex. Inflammatory cytokine secretion was determined using ELISA. Receptor mechanisms were investigated using antagonists for CB1, CB2, PPARα, PPARγ, TRPV1 and GPR55.

RESULTS: IFNγ and TNFα treatment increased phosphoprotein and cytokine levels in Caco-2 cultures and colonic explants. Phosphoprotein levels were significantly reduced by PEA or CBD in Caco-2 cultures and colonic explants. CBD and PEA prevented increases in cytokine production in explant colon, but not in Caco-2 cells. CBD effects were blocked by the CB2 antagonist AM630 and TRPV1 antagonist SB366791. PEA effects were blocked by the PPARα antagonist GW6471. PEA and CBD were anti-inflammatory in IBD and appendicitis explants.

CONCLUSION: PEA and CBD are anti-inflammatory in the human colon. This effect is not seen in cultured epithelial cells. Appropriately sized clinical trials should assess their efficacy.



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