The effects of cannabidiolic acid and cannabidiol on contractility of the gastrointestinal tract of Suncus murinus

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Abstract

Cannabidiol (CBD) has been shown to inhibit gastrointestinal (GI) transit in pathophysiologic in vivo models, while having no effect in physiologic controls. The actions of the precursor of CBD, cannabidiolic acid (CBDA), have not been investigated in the GI tract. The actions of these phytocannabinoids on the contractility of the GI tract of Suncus murinus were investigated in the current study. The effects of CBDA and CBD in resting state and pre-contracted isolated intestinal segments, and on the contractile effects of carbachol and electrical field stimulation (EFS) on the intestines of S. murinus were examined. CBDA and CBD induced a reduction in resting tissue tension of isolated intestinal segments which was not blocked by the cannabinoid CB1 receptor antagonist, AM251, the CB2 receptor antagonist AM630, or tetrodotoxin. CBDA and CBD reduced the magnitude of contractions induced by carbachol and the tension of intestinal segments that were pre-contracted with potassium chloride. In tissues stimulated by EFS, CBDA inhibited contractions induced by lower frequencies (0.1–4.0 Hz) of EFS, while CBD inhibited contractions induced by higher frequencies (4.0–20.0 Hz) of EFS. The data suggest that CBDA and CBD have inhibitory actions on the intestines of S. murinus that are not neuronallymediated or mediated via CB1 or CB2 receptors.