Cannabis Cannabinoid Res. 2021 Jun 28. doi: 10.1089/can.2021.0027. Online ahead of print.

The Cannabis Constituent Cannabigerol Does Not Disrupt Fear Memory Processes or Stress-Induced Anxiety in Mice

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PMID: 34182770 DOI: 10.1089/can.2021.0027

Abstract

Introduction: Medicinal cannabis has proliferated around the world and there is increasing interest in the therapeutic potential of individual plant-derived cannabinoids (phytocannabinoids). Preclinical evidence suggests the phytocannabinoid cannabigerol (CBG) could be useful in treating brain disorders, including stress and anxiety-related disorders. In this study, we aimed to explore whether CBG disrupts various contextually conditioned fear memory processes and trauma-induced anxiety-related behavior in a mouse model of post-traumatic stress disorder (PTSD). **Materials and Methods:** All mice underwent contextual fear conditioning. CBG was administered between 1 and 60 mg/kg intraperitoneally (i.p.). We first assessed the effects of repeated CBG exposure on long-term fear memories. We also examined whether acute CBG affected various fear memory processes, namely expression, acquisition, consolidation, and reconsolidation of conditioned fear. Finally, the effect of acute CBG administration on stress-induced anxiety in the light/dark test was assessed. **Results:** Repeated CBG exposure did not affect long-term conditioned fear that was observed 24 days after the conditioning session. Moreover, acute CBG administration did not influence the acquisition, consolidation, reconsolidation, or expression of contextually conditioned fear. Acute CBG treatment also did not affect stress-induced anxiety-related behaviors in the light/dark test. **Conclusions:** CBG was ineffective in disrupting long-term fear memories, various conditioned fear memory processes, or stress-induced anxiety-related behavior in mice. These preclinical data suggest CBG may have limited scope in the treatment of PTSD and stress-related anxiety.

Keywords: cannabigerol; inflammation; medicinal cannabis; post-traumatic stress disorder; stress.

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