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> [Cannabis Cannabinoid Res.](#) 2019 Sep 23;4(3):177-182. doi: 10.1089/can.2018.0054.
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Role of Cannabinoids and Terpenes in Cannabis-Mediated Analgesia in Rats

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Abstract

Introduction: *Cannabis sativa* has been used for centuries in treating pain. However, the analgesic role of many of its constituents including terpenes is unknown. This research examined the contributions of terpenes (volatile oil) and cannabinoids in cannabis-mediated analgesia in rats.

Methods: Animals received intraperitoneal administration of either vehicle, 10.0 or 18.0 mg/kg morphine, or various doses of the extract without terpenes, isolated terpenes, Δ^9 -tetrahydrocannabinol (THC), or the full extract. Thirty minutes later animals were tested on hotplate and tail-flick tests of thermal nociception. One week later, rats received a second administration of test articles and were tested 30 min later in the abdominal writhing test of inflammatory nociception. **Results:** In the thermal assays, hotplate and tail-flick latencies for morphine-treated rats were dose dependent and significantly higher than vehicle-treated animals. All the cannabinoid compounds except for the isolated terpenes produced dose-dependent increases in hotplate and tail-flick latencies. In the inflammatory nociceptive assay, animals treated with vehicle and isolated terpenes demonstrated increased abdominal writhing, whereas all the cannabinoid compounds significantly decreased abdominal writhing responses. **Conclusions:** Overall, THC alone produced robust analgesia equivalent to the full cannabis extract, whereas terpenes alone did not produce analgesia. These data suggest the analgesic activity of cannabis is largely mediated by THC, whereas terpenes alone do not cause alterations in cannabis-mediated analgesia.

Keywords: THC; analgesia; nociception; terpenes; volatile oil.

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