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[Int J Legal Med.](#) 2019 Sep;133(5):1411-1420. doi: 10.1007/s00414-019-02006-3. Epub 2019 Jan 30.

On the impact of cannabis consumption on traffic safety: a driving simulator study with habitual cannabis consumers

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PMID: 30701315 DOI: [10.1007/s00414-019-02006-3](#)

Abstract

To contribute to the ongoing discussion about threshold limits of Δ^9 -tetrahydrocannabinol (THC) in road traffic, a driving simulator study with 15 habitually cannabis consuming test persons was conducted. Probandes were tested on different routes after consumption of a maximum of three cannabis joints, each containing 300 μg THC/kg body weight (sober testing as well as testing directly, 3 and 6 h after cannabis consumption). Accompanying the drives, medical examinations including a blood sampling were performed. Driving faults and distinctive features in the medical examinations were allocated certain penalty points, which were then summed up and evaluated using the ANOVA model. The results showed that very high CIF values > 30 as well as serum THC concentrations > 15 ng/ml significantly increased the number of penalty points, but no direct correlation to the THC concentrations in serum and/or CIF values was detected. Instead, the point in time after cannabis consumption seems to play an important role concerning driving safety: significantly more driving faults were committed directly after consumption. Three hours after consumption, no significant increase of driving faults was seen. Six hours after consumption (during the so-called subacute phase), an increase of driving faults could be noted although not significant. Considering the limitation of our study (e.g. small test group, no placebo test persons, long lasting test situation with possible tiredness), further studies focusing on the time dependant impact of cannabis consumption on road traffic are required.

Keywords: Cannabis; Driving simulator; Impairment; Road traffic; Safety to drive; Subacute phase; THC.

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