CANNABIS & DRIVING

International Council on Alcohol, Drugs & Traffic Safety

1: Introduction



What is the aim of this fact sheet series?

The aim of this fact sheet series is to review the scientific evidence on cannabis and driving to provide objective information and inform the development of legislation to manage cannabis-impaired driving. The International Council on Alcohol, Drugs & Traffic Safety (ICADTS) aims to address road safety, with a focus on preventing and reducing traffic crashes caused by driving under the influence of cannabis. This approach demands a different approach from *drug control* strategies designed to reduce illicit cannabis use in the general population.

In jurisdictions where cannabis is entirely illicit, drug control might be prioritized over road safety. That is, a positive result on a biological test may result in a penalty for driving under the influence, regardless of the degree of impairment. However, as an increasing number of jurisdictions no longer prohibit cannabis use, we need to develop effective road safety policies that distinguish between cannabis-impaired driving and the prior use of cannabis only. This is especially pertinent with the increasing use of cannabinoid products as prescription medicines (i.e., medical cannabis).^{1,2}



What do we mean by cannabis?

Cannabis refers to products including and derived from the flowering and fruiting tops of the Cannabis sativa plant. These herbal and resinous products have many names, including marijuana, sinsemilla and hashish. Cannabis sativa comprises over 140 unique cannabinoids, but scientific knowledge of them is limited.³ The quantity of each cannabinoid can vary greatly depending on plant variety and growing technique. The two most abundant of these are the non-psychoactive tetrahydrocannabinolic acid (THCA) and cannabidiolic acid (CBDA). When these cannabinoid acids are decarboxylated through heating, such as smoking, vaporizing, or baking into edibles, they are converted into the psychoactive compounds tetrahydrocannabinol (THC) and cannabidiol (CBD).^{4,5}

Although CBD can be considered psychoactive, there is no evidence that CBD impairs *when consumed alone*. It is unclear whether the sedative effect of CBD would help generate impairment when cannabis is consumed in combination with alcohol or other drugs. According to a recent systematic review and meta-analysis, consumption of THC can impair driving ability.⁶ Limited evidence indicates that consumption of CBD does not appear to impair driving ability.^{7,8} *Driving under the influence of cannabis* should therefore be interpreted as *driving under the influence of THC*. This is an important consideration with respect to impaired driving legislation as low-THC cannabis and CBD products are increasingly promoted globally for their supposed *wellness* properties.^{9,10}

1: INTRODUCTION | CANNABIS & DRIVING

References

- Abrams, D. I. (2018). The therapeutic effects of Cannabis and 1. cannabinoids: An update from the National Academies of Sciences, Engineering and Medicine report. European Journal of Internal Medicine, 49, 7-11.
- Brands, B., Di Ciano, P., & Mann, R. E. (2021). Cannabis, 2. impaired driving and road safety: An overview of key questions and issues. Frontiers in Psychiatry, 12, 641549.
- 3. Hanuš, L. O., Meyer, S. M., Muñoz, E., Taglialatela-Scafati, O., & Appendino, G. (2016). Phytocannabinoids: a unified critical inventory. Natural Product Reports, 33(12), 1357-1392.
- Banister, S. D., Arnold, J. C., Connor, M., Glass, M., & McGre-4. gor, I. S. (2019). Dark classics in chemical neuroscience: Δ^9 -tetrahydrocannabinol. ACS Chemical Neuroscience, 10(5), 2160-2175.
- Gaoni, Y., & Mechoulam, R. (1964). Isolation, structure, and partial synthesis of an active constituent of hashish. Journal of the American Chemical Society, 86(8), 1646-1647.

- Simmons, S. M., Caird, J. K., Sterzer, F., & Asbridge, M. (2022). The effects of cannabis and alcohol on driving performance and driver behaviour: a systematic review and meta-analysis. Addiction, 117, 1843-1856.
- 7. Arkell, T. R., Vinckenbosch, F., Kevin, R. C., Theunissen, E. L., McGregor, I. S., & Ramaekers, J. G. (2020). Effect of cannabidiol and Δ 9-tetrahydrocannabinol on driving performance: a randomized clinical trial. JAMA, 324(21), 2177-2186.
- 8. McCartney D, Suraev AS, Doohan PT, Irwin C, Kevin RC, Grunstein RR, Hoyos CM, McGregor IS, 2022. Effects of cannabidiol on simulated driving and cognitive performance: A dose-ranging randomised controlled trial. J Psychopharmacol:2698811221095356. doi: 10.1177/02698811221095356.
- 9 Arkell, T. R., Hayley, A. C., & Downey, L. A. (2021). Managing the high: developing legislation and detection methods for cannabis impairment. Nature Reviews Neuroscience, 22(9), 584.
- 10. EMCDDA. (2020). Low THC cannabis products in Europe.

About ICADTS

The International Council on Alcohol, Drugs & Traffic Safety (ICADTS) is an independent not-for-profit body whose only goal is to reduce mortality and morbidity brought about by misuse of alcohol and drugs by operators of vehicles in all modes of transport.

To accomplish this goal, the Council sponsors international and regional conferences to collect, disseminate and share essential information among professionals in the fields of law, medicine, public health, economics, law enforcement, public information and education, human factors and public policy.

Acknowledgements

Special thanks to ICADTS Drugged Driving Work Group Co-Chairs: Jan Ramaekers, Maastricht University (Netherlands) Robyn D. Robertson, Traffic Injury Research Foundation (Canada) & Thomas Arkell, Swinburne University (Australia) and the Members who contributed their expertise.

Australia

Jeremy Davey | University of the Sunshine Coast

Iain McGregor | University of Sydney Luke Downey | Swinburne University Wayne Hall | University of Queensland

Belgium

Alain Verstraete | Ghent University

Canada

Christine Wickens | Centre for Addiction and Mental Health, Canada Jeff Brubacher | University of British Columbia Sarah Simmons | Traffic Injury Research Foundation

Germany

Anja Knoche | Federal Highway Research Institute (BASt)

Ireland

Denis Cusack | Medical Bureau of Road Safety, University College Dublin & Senior Coroner

Netherlands

Eef Theunissen | Maastricht University

Norway

Hallvard Gjerde | Oslo University Hospital Vigdis Vindenes | Oslo University Hospital

Portugal

Brendan Hughes | European Monitoring Centre for Drugs and Drug Addiction

Spain

F. Javier Alvarez | University of Valladolid

Switzerland

Marc Augsburger | University of Lausanne USA Christine Moore | 9-Delta Analytical LLC Marilyn Huestis | Huestis & Smith Toxicology, LLC Randy Atkins | National Highway Traffic Safety Administration Tara Kelley-Baker | National Highway Traffic Safety Administration Richard P. Compton | Traffic Safety Research LLC Ryan Smith | National Transportation Safety Board Staci Hoff | Washington Traffic Safety Commission Eduardo Romano | Pacific Institute for Research & Evaluation

COUNCIL ON ALCOHOL, DRUGS

For more information visit www.icadtsinternational.com Email: admin@icadtsinternational.com

1: INTRODUCTION | CANNABIS & DRIVING