

# Science of microdosing psychedelics remains patchy and anecdotal, say researchers

July 15 2019

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The practice of taking small, regular doses of psychedelic drugs to enhance mood, creativity, or productivity lacks robust scientific evidence, say scientists.

The process, called [microdosing](#), has been lauded by some, with high profile proponents in Silicon Valley. But to date, [scientific evidence](#) to support or even fully explore claims of the benefits and safety, has been lacking.

Now, an international group of researchers, led by Imperial College London and Maastricht University, has approached the issue in a wide-ranging review paper, published today in the *Journal of Psychopharmacology*, to tackle some of the key questions—including what is microdosing? Is it safe? Is it legal? And are the claims of benefits from taking small amounts of psychedelics even plausible?

According to the researchers, their review aims to present evidence around several themes of microdosing psychedelics, such as LSD or psilocybin (magic mushrooms), including discussions of concerns around impacts on cardiovascular health, as well as to providing a framework for future research in the area.

"Despite so much interest in the subject, we still don't have any agreed scientific consensus on what microdosing is—like what constitutes a 'micro' dose, how often someone would take it, and even if there may be potential health effects" said Professor David Nutt, Edmond J Safra

Chair in Neuropsychopharmacology at Imperial College London and senior author of the review.

Professor Nutt and the team define microdosing as the practice of taking repeated, low doses of psychedelic substance—at doses that do not impair a person's 'normal' functioning (a fraction of 'recreational dose') - in order to improve well-being and enhance cognitive or emotional processes.

However, in practice, frequency may vary widely—from a few consecutive days, to weekdays—as may strength and potency of substances depending on what it is and where it's from.

The review explains that while most reports on microdosing to date are anecdotal and have focused on positive experiences, future research should be expanded to focus on the potential risks.

Focusing on psilocybin—the active compound in magic mushrooms—as one of the two most commonly used psychedelic substances (alongside LSD), and being much further along the clinical pipeline to potential approval as a treatment, the team presents the available evidence on several aspects of microdosing.

Chief among the issues raised is the lack of controlled scientific studies, the standard measure in medical science—where the effect of a treatment is measured in those taking it against a control or placebo group (who do not take the compound). The authors also cite a lack of certainty around the doses used in previous trials, as well as where the substances came from, and their potency.

Regarding safety, they claim evidence for long-term, repeated dosing of psilocybin is lacking in humans and animals, and that there is some evidence to highlight cardiovascular risks.

Similarly, the authors describe how data on the behavioural effects of microdosing, such as increased concentration or creativity, remain patchy. Early-stage research has shown psilocybin targets specific receptors in the brain which bind to serotonin—a chemical messenger in the brain associated with feelings of happiness, as well as learning and memory. They speculate that these changes to the activity of networks of brain cells may explain some of the reported therapeutic benefits of microdosing, such as improvement in mood, memory or productivity.

Beyond the scientific issues, the legality and regulation of substances remains a significant barrier, say the researchers. Despite the renaissance in the science of psychedelic research, the drugs in the field—chiefly psilocybin, LSD and DMT—remain Schedule 1 Drugs under the UN Convention and Class A under the Misuse of Drugs Act in the UK. In the UK, this currently means only researchers with a licence from the Home Office are able to obtain and test substances, and anyone obtaining substances for microdosing without a licence could face prosecution.

The team hopes that the evidence laid out in their review will go some way to focus the attention of the research community in order to answer some of the major remaining questions in the field. They write "rigorous, placebo-controlled clinical studies need to be conducted with low doses of [psilocybin] to determine whether there is any evidence for the claims of microdosers".

Dr. Kim Kuypers, from Maastricht University and first author of the review, said: "This review is timely as a lot of hope is generated by positive media reports about alleged effects of microdosing. Patients might feel attracted by those reports to try it but may actually not be helped by it. We try to emphasise the lack of scientific proof that microdosing is indeed effective in combatting certain symptoms and hope that this will give impetus to new lines of research in this area."

Professor Nutt added: "Researchers working in the area of psychedelics regularly receive requests from the media asking about microdosing. We hope that this critique will provide answers to all these questions in future as well as providing a framework for research."

**More information:** Kim PC Kuypers et al, Microdosing psychedelics: More questions than answers? An overview and suggestions for future research, *Journal of Psychopharmacology* (2019). [DOI: 10.1177/0269881119857204](https://doi.org/10.1177/0269881119857204)

Provided by Imperial College London

Citation: Science of microdosing psychedelics remains patchy and anecdotal, say researchers (2019, July 15) retrieved 20 April 2024 from <https://medicalxpress.com/news/2019-07-science-microdosing-psychedelics-patchy-anecdotal.html>

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