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The Last of Us in Therapy: How mind-controlling fungi and gut bacteria affect your mental health

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***Abstract*— The "psilocybiome" represents the mutually beneficial relationship between ourselves, our bacteria, and psychedelic drugs. This short review briefly discusses the benefits and limitations surrounding the potential for psychedelic therapy to synergize with gut bacteria to help regulate and maintain proper balance in the immune system, diet, and stress levels. Psychedelic therapy is a novel treatment strategy that has the potential to improve patient mental health, and, by identifying the types of gut bacteria present in patients, it can aid in personalizing medicine by determining how well their "psilocybiome" may respond.**

***Keywords*—Bacteria, Cognition & Perception, Digestive System, Fungi, Medicine and Health, Mental Health Disorders, Molecular, Genetic, and Biochemical Nutrition, Nervous System, Pharmacology**

HALLUCINOGENIC fungi and mind-altering bacteria aren't new to the world, but research about the relationship between our brain and the microorganisms living inside us has gained interest over the years. According to a recent review article by Kelly et al. (2023), the "microbiota-gut-brain" (MGB) axis helps regulate our immune system, metabolism, stress response, and may even play a role in our response to psychedelic therapy. Administered in the right contexts with medical supervision, taking hallucinogenic drugs can take us on a groovy trip towards a state of improved mental health.

The majority of our body's microbiome (bacteria) and mycobiome (fungi) reside in the gastrointestinal (GI) tract and its population is heavily influenced by diet. Unlike Western diets that are low in fiber and high in processed foods, diets high in fermented foods and fiber increase the gut's biodiversity. Hosting a diverse population of these microorganisms inside ourselves is beneficial for maintaining proper gut health, regulating metabolism, and balancing the immune system.

Additionally, the bacteria and fungi living in our gut can communicate with our brain and influence our levels of stress, anxiety, depression, and addiction. Many psychiatric disorders with harmful emotional, behavioral, and cognitive patterns can be linked to disruptions in our gut microbiome that resulted in a depletion of anti-inflammatory bacteria and an increase in pro-inflammatory bacteria (Kelly et al., 2023).

The administration of serotonergic psychedelics, such as psilocybin from magic mushrooms, as psychological support

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can deliver therapeutic benefits for certain mental health disorders. Psychedelic therapy is comprised of three phases: preparation, administration, and integration. The MGB axis could affect the short-term and long-term responses in each phase via initial effectiveness, drug metabolism, or behavioral reinforcement and maintenance.

Studies involving mice and humans suggest that psychedelic therapy has the potential to:

- Improve treatment outcomes for depression and reduce stress and anxiety
- Improve resilience to stress
- Reduce relapse rates in stress-related psychiatric disorders
- Reduce inflammation
- Strengthen perceived social connectivity
- Increase oxytocin
- Help overcome alcohol and nicotine addiction
- Improve diet and increase exercise

However, additional research is needed to fully understand the advantages and disadvantages of getting high on hallucinogenic mushrooms with our gut bacteria. There is limited understanding on the mechanism of action, how patient genetics may influence an individual's response, and potential cross-reactions (Sellers & Romach, 2023). Additionally, the majority of clinical trials are biased towards recruiting positive responders and are limited to predominately Caucasian populations (Sellers & Romach, 2023).

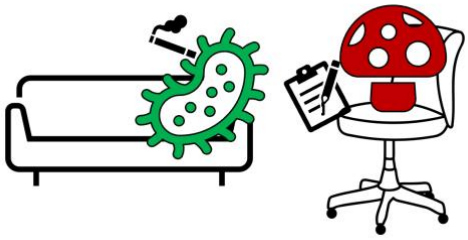
Preliminary clinical trials revealed that the most common side effects of psychedelic therapy are headache, nausea, dizziness, and fatigue. Analysis of the 2017 Global Drug Survey found that the most common symptoms of magic mushroom use were adverse psychological reactions such as anxiety and paranoia (Kopra et al., 2022), which indicates that not all patients would respond well to its use in psychedelic therapy. Overall, only a rare minority of respondents (0.2%) felt the need to seek emergency medical treatment, and those who did seek treatment recovered quickly from their adverse experiences within 24h (Kopra et al., 2022). Furthermore, someone would have to consume an estimated 10kg of mushrooms in order to reach a lethal dose (6g) of psilocybin, which is unlikely to occur without vomiting those mushrooms first (Kopra et al., 2022).

While the Global Drug Survey is biased due to reliance on retrospective self-reporting, the analysis of responses still suggests that psilocybins are relatively safe. Even though there has not been evidence of physiological harm or addiction, proper education, monitoring, and regulation is still required. News reports have skewed many preliminary clinical results in positive views without acknowledging study limitations or potential conflicts of interest, which results in attractive yet misleading articles and beliefs being promoted through social media (Sellers & Romach, 2023). It's important to keep in mind that due to the ability of psilocybins to alter perception and cognition as well as limited research into their safety and lack of approval for therapeutic use, they are still considered Schedule 1 drugs and should not be taken without proper medical supervision.

Kelly et al. (2023) refers to this cooperative relationship

between ourselves, gut bacteria, and psychedelics as the "psilocybiome". Together, the psilocybiome regulates and maintains balance in our immune system, diet, stress levels, and physical activity. Identifying each person's unique gut microbiome could help personalize medicine by serving as a biomarker to identify patients who may (or may not) benefit from receiving psychedelic therapy.

In the end, mind-altering fungi and gut bacteria can be beneficial to our mental health, and we don't have to worry about turning into flesh-eating zombies. *Yet.*



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