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LEMON AID

MAGIC MUSHROOMS: ONE WEIRD TRICK COULD MAKE PSILOCYBIN THERAPY BETTER

You probably have the key ingredient in your kitchen.



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MAGIC MUSHROOMS' THERAPEUTIC POTENTIAL IS UNDENIABLE. Study after study shows that psilocybin — a psychoactive compound in magic mushrooms — can rebalance the brain and may help treat psychiatric conditions like PTSD, anxiety, and depression. A study published in April went further: compared to the classic antidepressant Lexapro, psilocybin is a more effective antidepressant.

But with powerful drugs, there tend to be unwanted side effects. One of the most common for psilocybin seems to be nausea. Most [psilocybin studies](#) list feeling queasy as among the most common unwanted side effects participants experienced. Some participants report vomiting, too, but puking is less common than just feeling like you might barf. Importantly, the nausea wasn't enough to ruin the experience — these participants' outcomes were ultimately positive.

Maybe the idea of puking — or just feeling like you need to puke — is enough to put you off the therapy. Of course, for those who have [emetophobia](#), a fear of vomiting, or just a weak stomach, the aversion may be even more acute. There may be a trick to dramatically reduce any possible nausea, however: A common kitchen staple may be the thing that gets more people on board with psilocybin therapy.

The gut is sometimes called "[the second brain](#)," because it relies on many of the same neurotransmitters and neurons as the brain. They share another similarity, too: The brain is protected by a blood-brain barrier, a filter designed to protect the central nervous system from harmful substances — the gut has a similar barrier.

One way the gut prevents all those receptors in your stomach from absorbing something that might be harmful is by breaking everything that enters it down using stomach acid.

Biologist [Ian Bollinger](#) tells *Inverse*: "Nobody has solidly pinned down one element [of magic mushrooms] that causes nausea." But, he says, there's a strong theory about a significant contributing factor. Bollinger is a researcher with the [Hyphae Design Laboratory](#), which describes itself as "Ecological Urbanists in Action" committed to "healthy design." Last month, Bollinger served as the [expert psilocybin tester](#) for the first-ever "Psilocybin Cup."

The theory has to do with what happens when our stomach acid gets to work breaking down the mushroom, Bollinger says. One of the things it breaks down is a substance called beta-glucan, which is found in the cell walls of fungi, bacteria, and even some plants like oats. Stomach acid breaks down those cell walls. And the breaking down of beta-glucan, he says "is typically what people associate with an upset stomach."

There's solid evidence to support this theory. Some people take beta-glucan supplements for **INVERSE** of standard mental health, for example; among the possible side effects of those supplements are nausea, diarrhea, and vomiting.

David Gard, a researcher at the University of California, San Francisco's TrPR Research program, which examines the "mechanisms, safety, and efficacy of psychedelics for specific health conditions" tells *Inverse* side effects like nausea may be expected with any therapy.

"Every medication has side effects, and some are quite prohibitive for people," he says.

 Lemons could make psilocybin therapy better. Daniela Simona Temneanu / EyeEm/EyeEm/Getty Images

HOW IT WORKS — If you're legally able to try psilocybin therapy, but worried about nausea, there is a trick that can essentially "pre-digest" that beta-glucan and help you avoid the unwanted side effect.

"Stomach acid has a Ph of around two," Bollinger explains — Ph refers to the level of acidity.

"Lemon juice also has a Ph of around two."

So here's what you can do, according to Bollinger:

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Grind the mushrooms into a fine powder — this homogenizes the substance, evenly dispersing the psilocybin.

Put the powder in a shot glass.

Pour lemon juice over it and completely submerge the powder.

Stir.

“Some people say to leave it for 20 minutes, but I think that’s too long,” Bollinger says. “Just the process of stirring exposes the cell walls” to the lemon juice — breaking them down.


This process functionally “pre-digests” that beta-glucan, so your digestive system has less work to do once you consume it. Less work, so it goes, equates to less chance of sickness.

Yes, says Bollinger. Magic mushrooms are associated with psilocybin, but the substance that’s most likely to make you trip in a magic mushroom is actually called **psilocin**. Once inside the body, psilocybin is converted into psilocin through a process called dephosphorylation. The citrus bath does most of that converting for you.

“Lemon juice is an aqueous solution with a low Ph,” Bollinger explains. “Low Ph means excessive hydrogens. Putting psilocybin in that solution removes the phosphate group and replaces it with a hydroxyl group. That turns it into psilocin.”

As a result, your trip will come on much faster, because you don’t have to wait while your body does all that digesting and converting — it’s done already. It could also make the trip shorter but increase its intensity.

“If you think of the experience like a bell curve,” Bollinger says, “with the effects slowly ramping up, peaking, and ramping back down, a lemon [bath] will compress it. What you’re doing is heightening the curve but you’re also shortening the length.”

Depending on the person, a shorter but more intense experience may be preferable to a long, **INVERSE**  I have had one. Either way, you should discuss the process with the medical professional assisting you prior to engaging in psilocybin therapy.

While it's likely to help, it's not a guarantee. Bollinger says beta-glucan might not be the only factor contributing to nausea.

“There might be a tryptamine or some other compound in the mushroom that, when metabolized, causes someone to feel sick,” he says. “This is an area with a lot of unknowns and we need better funding for research.”

For his part, Gard doesn't see nausea as a barrier for people who have access to psilocybin therapy.

“Psilocybin is usually one dose, which is a dramatic shift from the typical way that antidepressants are prescribed — usually for months or years,” Gard says. “My guess is that this will not be a big barrier because of this one-time dose with psilocybin — the symptoms far outweigh the side effect of nausea.”

That may change as more states decriminalize psilocybin and psilocybin therapy becomes more mainstream. If it does, mental health professionals administering the therapy would be wise to keep some lemons handy.

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