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Marijuana — Does it produce serotonin? ^[1]

Dear Alice,

My girlfriend tells me she uses marijuana to calm herself if she is having a stressful day. She has been doing this for many years. She says smoking pot is like self-medicating — it is better than using anti-depressants. She also claims smoking pot helps with depression because of how it helps produce serotonin in the body. What is serotonin and how does it help depression? Does smoking pot really help with managing your anxiety, depression, etc.?

Thank you,

A very concerned boyfriend

Answer

Dear A very concerned boyfriend,

Marijuana (also known as pot or weed), serotonin, and antidepressants all have unique effects in the body, and mapping out what these substances do may be helpful in understanding your girlfriend's "self-medication." Serotonin, a chemical neurotransmitter, acts as a natural mood stabilizer (among other bodily functions). When these neurotransmitters become imbalanced, they have been correlated with depression. To help regulate the neurotransmitters, some take certain antidepressants, such as selective serotonin reuptake inhibitors (SSRIs). In the body, serotonin is synthesized from tryptophan, an amino acid found in certain foods (among other places) but not marijuana. Instead, the relaxing effects of smoking weed are due to a different set of substances, namely tetrahydrocannabinol (THC) and cannabidiol. While lighting up may help lighten the mood for some, it may be worth a visit to a mental health professional or health care provider for your girlfriend to discuss her depression and explore alternative methods to treat it.

First, a bit more about serotonin: it plays a role in quite a few bodily functions. It's found in the brain, blood, the stomach, and mucous membranes that line the digestive tract. It helps regulate all sorts of functions, such as mood, anxiety, nausea, blood clotting, libido, sleeping, wound healing, bone health, and bowel movements. In terms of mood regulation, balanced levels of serotonin are associated with feeling happier, calmer, more focused, and more stable. Some natural ways to get serotonin include being in the sun, meditating, being physically active, and snacking on certain foods. However, for some people living with depression and anxiety,

antidepressant medication may be prescribed by a medical professional to help balance serotonin levels. Those who are depressed tend to have below typical levels of serotonin in the brain, while typical levels of serotonin have been shown to counter some depressive symptoms. By blocking serotonin reuptake, SSRIs increase the level of serotonin available in the brain. Unlike periodic use of marijuana, those who take SSRIs are encouraged to take them consistently, as missed pills or stopping abruptly could lead to withdrawal-like symptoms (even though SSRIs are not addictive). If this is an option your girlfriend would like to explore, it's best for her health and safety to disclose her use of marijuana, along with any other drugs or supplements, to her health care provider as they could all interact with SSRIs.

As for marijuana, it doesn't directly produce serotonin, but it may help with mood regulation. Studies report that some people find it effective in alleviating symptoms associated with depression, [anxiety](#) [2], bipolar disorder, post-traumatic stress disorder, obsessive-compulsive disorder, [trichotillomania](#) [3], and Tourette syndrome. THC mimics the chemical structure of a naturally occurring cannabinoid neurotransmitter in the brain called anandamide. When ingested, THC binds to cannabinoid receptors in the brain and affects the brain functions that anandamide usually affects, such as memory, concentration, pleasure, and time perception, just to name a few. The "high" from using marijuana is also partly attributed to THC signaling the release of dopamine, another neurotransmitter. This may be what your girlfriend is experiencing. Some of the ways that marijuana cause people to relax are by:

- Reducing blood pressure.
- Increasing relaxation.
- Reducing coordination.
- Inducing sleepiness.
- Lowering attention span.
- Creating a sense of altered time and space.

The therapeutic effects of marijuana aren't all due to THC; another key chemical component to marijuana is cannibidiol. Cannibidiol is not associated with any of the psychotic-inducing effects of marijuana, but is likely responsible for the medicinal benefits of marijuana, including relief of nausea, anxiety, and inflammation. However, studies have shown mixed results in treating depression, anxiety, and related conditions with THC and synthetic cannibidiol. The concentration of THC varies between plants, as does the ratio of cannibidiol to THC. But generally speaking, higher doses of marijuana can cause delusions, hallucinations, and impaired memory, especially if the THC to cannibidiol ratio is high. Speaking of risks, while marijuana use may seem soothing to your girlfriend, it's good to keep in mind other potential negative effects.

With all these potential benefits and risks in mind, does marijuana actually help manage depression and anxiety? For certain people and certain types of depression and anxiety, some studies have found marijuana to be effective; however, it affects each individual differently in both the short- and long-term. Luckily, there are multiple strategies to manage depression and anxiety your girlfriend may explore further. It may be best for her to speak with a mental health professional or a health care provider to determine which strategy is most appropriate. Either professional may recommend self-care strategies (such as meditation, physical activity, or various coping mechanisms), medication, therapy, or a combination of any of these.

As a partner, learning more about effective coping strategies can help you better support your girlfriend — so kudos to you for seeking out more information and clarity. If you're concerned about your loved one's marijuana use for the purpose of stress management, you may decide to talk with your girlfriend about it that if she's interested, you can explore alternative ways to manage stress together. Perhaps if you share this information with your girlfriend, she may be more interested in trying a few different coping strategies, sans marijuana. If you do suggest that she visits a provider, you could offer to go with her to offer more comfort and support.

Take care,

Alice!

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