

## ANXIETY



Anxiety is a somewhat ephemeral concept and difficult to describe but primarily consists of an enhanced state of awareness or hypervigilance in anticipation of danger or harmful situations. Anxiety is a normal adaptive response to external stimuli, but it becomes detrimental when chronic or excessive symptoms begin to interfere with normal functions. Anxiety is both physical (increased heart rate and activation of the 'fight or flight' response) and psychological with multiple overlapping symptoms including fear, stress, depression, sleep disorders, and substance abuse.

Clinically, anxiety is typically treated with selective serotonin reuptake inhibitors (SSRI's), selective noradrenalin reuptake inhibitors (SNRI's) and repurposed psychotherapy and antiseizure drugs, including benzodiazepines and the 5HT1A agonist, buspirone. Current clinical medications show significant drawbacks, including poor efficacy and sometimes severe side effects.

Cannabis is known to reduce anxiety and the impact of processing disorders, in general. However, the mechanism for how cannabis affects anxiety is complicated.

THC affects anxiety by slowing the action of cortical neurons. THC activates the CB1 receptor, which then acts as a brake to slow down normal brain signaling. At low doses, this has a relaxing effect, allowing highly activated brain regions to relax. An analogy is the headache you might get from clenching your teeth. Easing up on that type of pressure is relaxing.

It is important to understand that THC displays biphasic effects on anxiety. This means that lower doses (lower THC concentration product or lower overall dosage amount) are beneficial for reducing anxiety. On the other hand, THC can actually cause the hyperactive/vigilant anxious states at high doses. This is where CBD completes the equation. CBD mitigates the higher end effects of THC by partially blocking its action at the cannabinoid receptors. One simply cannot get as high with CBD in their system as without.

CBD has also been studied intensely in its own right as a treatment for anxiety. CBD interacts with brain chemistry in highly variable ways which happen to be complementary to the action of THC. CBD desensitizes TRPV1 signaling, which is known to be beneficial for anxiety. THC's ability to actually cause anxiety at higher concentrations is dependent on enhanced TRPV1 signaling. CBD can interrupt that effect. CBD also directly affects anxiety by stimulating the serotonin 5HT1A receptor (much like commercial buspirone), which releases serotonin, a hormone that promotes feeling of well-being, stability, and happiness.

### TERPENES

Linalool and Limonene both are known to have calming (anxiolytic) effects. Strains higher in these terpenes will likely have additive, beneficial effects.

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