

What's the Deal with Cannabis Absorption?

Absorption is the process by which a substance gets into the body. Absorption of cannabinoids such as THC and CBD can be influenced by numerous factors including dose, method of administration, whether it is taken with food and which foods it is taken with, and a person's gender, age, and body weight.

Common methods of administration of cannabis include inhalation (smoking/vaping), taken under the tongue (sublingual tinctures), administered into the sides of the mouth (oromucosal spray) swallowed (edibles), transdermal through the skin (creams and patches), or transrectal (suppositories). In all cases except for transdermal administration, the goal is to get cannabis compounds into the bloodstream where they can be circulated throughout the brain and body.

Because cannabinoids have lipophilic properties they don't dissolve in water. Therefore, oral preparations must be dissolved in alcohol or oil to be absorbed into the body. Micronized cannabis preparations are cannabis molecules that are suspended in microscopic lipid balls which maximizes the amount that is absorbed into the body.



Inhalation: Inhaling cannabis provides the most rapid onset within minutes, but a relatively short duration of effect (2-4 hours). Controlling the dose of inhaled cannabis is generally difficult although newer metered inhaler devices can deliver specified amounts of cannabis vapor.

Oral: When cannabis is ingested orally, it passes into the stomach and then into the small intestine where it is absorbed into the blood. It passes next through the liver where a large proportion of it is metabolized into less active forms. The remaining active cannabinoids then enter the bloodstream and travel to the rest of the body where they exert their effects. Because of the long distance, it travels from the mouth to the bloodstream, orally ingested cannabis has the longest time to onset (30-60 minutes with peak at 1-2 hours). The time to onset and absorbed dose of oral cannabis can vary depending on when a person has eaten and what they have eaten relative to when they ingest cannabis. Specifically, when cannabis is ingested with food, and especially with fatty foods, the time to onset is delayed and the effects are prolonged relative to taking it on an empty stomach. Because of the delayed and somewhat unpredictable onset of action, it is important to always start with low doses of oral cannabis and wait at least 60 minutes to assess the effects before taking more.

Sublingual: When sublingual cannabis is used, the cannabis is absorbed directly into the blood vessels under the tongue and therefore starts working more quickly than oral forms of cannabis. In fact, effects can be noticed in as little as 5-10 minutes. In addition, by passing directly into the bloodstream, there is no initial metabolism by the liver. Of all dose forms, the sublingual tincture is the easiest to control (based on the number of drops) and because of its absorption under the tongue, it is unaffected by food and has a more predictable time to onset, duration, and effect.

Transdermal: Cannabis compounds do not generally penetrate particularly well through the skin which can limit the effectiveness of topical cannabis when used to treat pain in muscles or joints. Voltaren gel is an over-the-counter topical anti-inflammatory medication that is mixed with a proprietary compound called Emugel[®], an absorption enhancer, which allows the medication to penetrate more deeply into body tissues. Therefore, by mixing topical cannabis with Voltaren gel, the cannabis can penetrate more deeply into the body and may be more effective.

To determine which method of cannabis administration may work best for you, it is recommended that you consult with a cannabis-literate clinician to ensure that cannabis is used safely and effectively.