

CANNABIS EDIBLE SHELF-LIFE FACTSHEET



DETERMINING SHELF-LIFE

Cannabis Edibles and Drinkables

Cannabis edible products must uphold food safety and quality over time similarly to non-cannabis food products, however with the addition of maintaining cannabis potency. The cannabis component (cannabinoids) itself can degrade over time so shelf-life studies for edibles must also ensure the potency of the product remains within the specification for the duration of the product's shelf life. To determine this, a shelf-life study needs to be conducted on the food product.

WHAT IS A SHELF-LIFE STUDY?

In order to accurately determine the durable life or "best before" date of a prepackaged food a shelf-life study is conducted. During a study, data is collected showing the food will remain safe and palatable until the end of durable life under conditions it normally handled and stored.

TYPES OF SHELF-LIFE STUDIES

Direct or real-time (ambient) – food is stored under normal room temperature conditions to resemble an "on the shelf" environment.

Indirect or accelerated – the shelf-life is predicted by using accelerated factors such as higher temperatures and humidity to increase the rate of deterioration of the product.

Accelerated studies are used for food that have a longer shelf-life but one needs to understand the product to be able to correctly predict the shelf life. They are also mostly suitable for shelf-stable products, which all cannabis edibles must be. All accelerated studies should be done in tandem with a real-time study to help validate the approximated shelf-life. In terms of running an accelerated study in a cannabis edible product it is extremely important to also run an ambient study as that data will be the most accurate. Heat can affect the stability of THC/CBC so potency could decrease at a more rapid rate.

FACTORS AFFECTING THE SHELF-LIFE OF A PRODUCT

Food can be affected by several factors that will impact the shelf life. All these factors can affect the efficacy of the THC and CBD over time as well.

- **Intrinsic factors** – relate to the product itself
- **Extrinsic factors** – relate to external conditions

INTRINSIC FACTORS AFFECTING THC/CBD (CANNABINOIDS)

Product formulation

How the cannabinoids are incorporated into the food matrix you are developing can affect its stability over time. You will want to ensure it is homogenous within the product or based on the food product, it could separate over time. For example, not properly emulsifying a beverage. Some forms, such as encapsulation of cannabis oils, are being prepared for easy incorporation into certain food matrices and that also protects the cannabinoids from the factors that cause degradation.

The other ingredients you use in your food product could interact with the cannabinoids. The main example being acids. Being exposed to acid and therefore low pH environments could potentially cause the cannabinoids to degrade at a faster rate.

Extrinsic factors affecting THC/CBD

Processing - The main factor to be aware for processing is heat. Again, being exposed to high temperatures could cause the cannabinoids to degrade. If possible, making sure the cannabis portion of the food matrix is added at a time in production with the least exposure to heat will minimize degradation. This will help maintain a longer shelf-life of the product.

Oxygen – exposure to oxygen will accelerate the degradation of cannabinoids. Ideally, most of the common foods that cannabinoids are incorporated in to help protect it from oxygen. It is important however to ensure proper packaging is used to help protect into the product from oxygen exposure like any other food product.

Light – on the topic of packaging, it is also important to protect the food product from exposure to light as this will cause the shelf-life of the food product and the cannabinoids to decrease.

Storage conditions – all the factors listed above, light, heat (temperature fluctuations) and oxygen apply to storage conditions. A food products journey through the supply chain and once in the hands of the consumer, should ensure it is protected from these factors as much as possible.

WHAT OCCURS DURING A SHELF-LIFE STUDY?

Various tests will occur during set time intervals to help evaluate that the food product is safe, has desirable quality and has proper chemical and physical characteristics. The type of testing that will occur is dependant on the food product. Standard testing for food products are as follows;

- **Sensory** – appearance, texture, odor, taste
- **Chemical** – pH, water activity (Aw), brix
- **Microbiological** – yeast and molds, total aerobic, and any specific tests depending on the food product

The differences that occur when running a shelf-life study on cannabis infused products are the following;

- **Potency** – this is evaluated closely at regular timepoint through out the study to ensure it remains in the specifications stated by Health Canada
 - <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/resources/regulations-edible-cannabis-extracts-topicals.html>
- **Sensory evaluations** – Due to regulations, general consumption of cannabis edibles is not permitted. Specific licensing needs to be acquired and protocols set up to conduct any sensory evaluations with human participants. If companies would like to know how the sensory characteristics of a product is affected over time they will have to find a company that can provide this service or have a shelf life study conducted on their product without any active cannabis ingredient in it.

The study will be set for a time period based on the intended shelf life of the product. Testing will occur until the results show that the product is failing in any of the areas affecting the safety, quality or set regulations it is required to meet.

WHAT IS THE RESULT?

After a shelf-life study has been completed and the data reviewed and interpreted, you will be able to have an estimate of how long your product will maintain its quality, safety and efficacy. This will then allow you to put a “best before” date on your product if you choose. With the results of a shelf-life study, you will know if any changes need to be made to your product to ensure the consumer is getting the best quality and the product meets regulations.

For more information on general food product shelf-life and cannabis edible regulations please refer to the following;

Shelf-life studies – requirement for the Safe Food for Canadians Regulations

<https://inspection.canada.ca/preventive-controls/shelf-life-studies/eng/1518010592756/1528203595232>

Shelf-Life Determination – Perennia

<https://www.perennia.ca/product-development/shelf-life-determination/>

<https://www.youtube.com/watch?v=GoGQ3AH2jQk>

Final Regulations: Edible Cannabis, cannabis extracts, cannabis topicals

<https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/resources/regulations-edible-cannabis-extracts-topicals.html>

If you have any questions on conducting a cannabis edible shelf-life study with Bloom Labs please go to the website to contact our specialists.

<https://bloomlabs.ca/shelf-life/>