



Division of Licensing Services
Bureau of Special Licensing

150 N. 18th Avenue, Suite 410
Phoenix, Arizona 85007
(602) 364-0857

DOUGLAS A. DUCEY, GOVERNOR
CARA M. CHRIST, MD, DIRECTOR

**Recommendations for Best Practices Regarding Marijuana Extractions,
Concentrates, Infusion Kitchens and Edible Food Products Containing
Marijuana**

The Bureau of Special Licensing within the Arizona Department of Health Services (Department) houses the Arizona Medical Marijuana Program which is responsible for ensuring that the Arizona Medical Marijuana Act is enforced and that all dispensaries, cultivation sites and infusion kitchens are operating as required. Dispensaries that prepare, sell, or dispense edible food products containing marijuana must do so according to the requirements of the Arizona State Food Code which is covered under Arizona Administrative Code Title 9, Chapter 8, Article 1 (9 A.A.C. 8, Article 1).

The first infusion kitchen in Arizona opened in 2013. Due to the novelty of the industry, regulation and oversight of the production of infused products and edibles must adapt with the industry. Unlike traditional food products which have published research regarding safety and growth of pathogens, edible food products containing marijuana do not have published research that address pathogen growth in extractions. Given the increase in infusion kitchens as well as variety of edible products, it is the Department's responsibility to enforce current food regulations to protect the health and safety of consumers and use existing research to assess any risks associated with edible food products containing marijuana.

Safety Concerns

A safety concern with marijuana extractions is the potential presence of *Clostridium botulinum* (*C. botulinum*), a spore-forming bacterium found on plant matter and in the soil. Other types of plant extractions are known to contain spores and these spores can survive high temperatures during cooking or pasteurization. When spores germinate under the right conditions, they can produce a harmful toxin that results in severe illness or death.

Products of Concern

Products that have the potential to harbor this bacterium include:

- Consumable marijuana extractions and concentrates
- Infusions made from extractions (infused oils, butters, honey, tinctures, syrups, juices, etc.)
- Most edibles that contain extraction ingredients (excepting those with a pH <4.6, water activity < 0.92, or a pH < 5.6 with a water activity < 0.95)

Safety Controls

Ways to prevent formation of *C. botulinum* toxin include:

- Irradiating plant material to destroy spores and bacteria which will prevent toxin formation
- Refrigerating plant material extractions and concentrates at 41°F or less to prevent growth of existing spores, unless infused into low water activity baked goods proven to be shelf-stable
- Infusion of extraction or concentrate into a 190/200 proof alcohol with no added ingredients



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CORY NELSON, INTERIM DIRECTOR

Heating to high temperatures under pressure for a short period of time may be an effective control to prevent toxin formation, but no current research has determined the efficacy of this step in marijuana extractions and infusions.

Storage Recommendations

Marijuana extractions, concentrates and edible food products containing marijuana that are intended for consumption should be refrigerated at 41°F to prevent growth of *C. botulinum* spores. This includes tinctures, edible oils, honey, syrups, juices, pesto, butters, coffee drinks, olive oils, sauces, salad dressings, glycerine/glycerol based products or reduced oxygen packaged foods and other potentially hazardous food (refer to 9 A.C.C. 8, Article 1).

Extractions, concentrates and infused products that have a pH <4.6, water activity < 0.92, or a pH < 5.6 with a water activity < 0.95 are considered non-potentially hazardous and should not support rapid growth of microorganisms outside refrigerated temperatures. The infused products must not provide an anaerobic environment for spores to grow.

Extraction Requirements

Dispensaries and cultivation sites are advised to use a close-loop system for extractions, and are required to extract with solvents that are Generally Recognized as Safe (GRAS). Any substance that is added to food is considered a food additive, and residue from solvents present after extraction is considered a food additive. All additives must be listed as part of labeling requirements for any product that is produced from extractions, regardless of type of extraction.