

Legalizing BHO in Canada

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Introduction

Since its inception, Abstrax Tech has always demonstrated a commitment to promoting research and development that facilitates the production of quality products for consumers. In 2017, the government of Canada was preparing to outlaw hydrocarbon extractions. Hydrocarbon extracts comprise a significant portion of the cannabis extracts market, with most producers and consumers expressing preference towards this mode of extraction and its resulting products. Some terms used to describe cannabis extracts produced by hydrocarbon extraction include: Butane Hash Oil (BHO), high terpene extract (HTE), sugar, diamonds, shatter, budder, wax, sauce, and resin. Not only do these types of extracts deliver potent cannabinoids with a rich terpene profile, but hydrocarbon extraction methods produce these extracts in a more cost-effective and efficient manner than any other type of extraction.

In an effort to prevent the passage of legislature outlawing hydrocarbon extraction, Kevin Koby, Chief Scientific Officer and co-founder of Abstrax, took the opportunity to educate the Canadian government. Alongside ETS and Hollistek, Koby outlined a compelling case of the extraction method's benefits. In the paper, Koby establishes the need for regulatory oversight for this

extraction method, with an emphasis on the tendency for illicit production of these extracts in unregulated markets. Koby also addressed safety precautions being taken to ensure this kind of extraction is safe for both producers and consumers. Ultimately, Koby's case study convinced legislators that maintaining this extraction method in the legal cannabis landscape improves safety measures for all.

In order to understand why it is necessary that hydrocarbon extraction remains legal and regulated in Canada, it is important to first understand the distinct benefits of utilizing this type of solvent-based extraction.

“Ultimately, Koby's case study convinced legislators that maintaining this extraction method in the legal cannabis landscape improves safety measures for all”



Choosing a Solvent: Why Hydrocarbons?

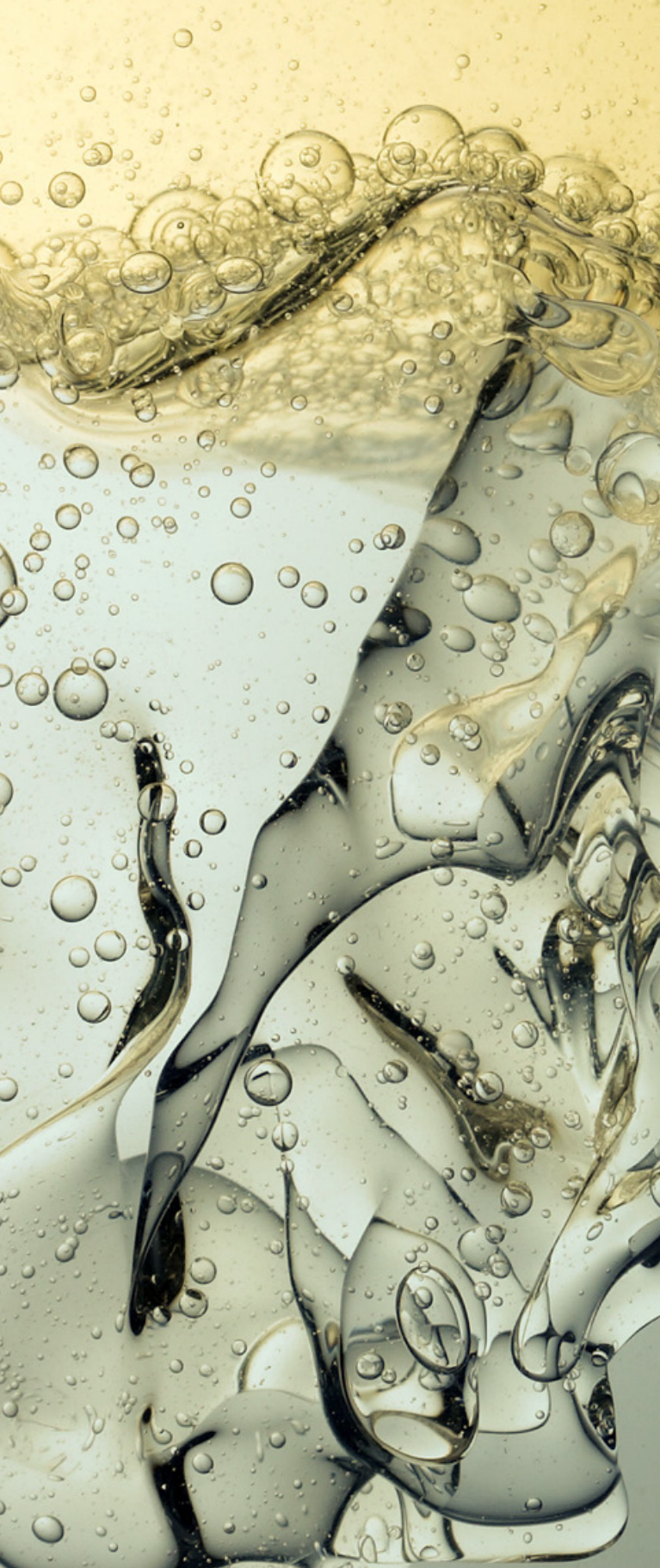
Extracting cannabinoids starts with considering which solvent is best for the dissolution and extraction of cannabinoids and terpenes. Simply put, **solvents are chemicals which are used to dissolve other compounds.** Most cannabinoid extractions are carried out by a class of solvents called “organic solvents”. Solvents are deemed “organic” simply by containing carbon.

Some organic solvents are made of only hydrogen and carbon, and are therefore referred to as hydrocarbons. Hydrocarbons are the type of organic solvent most frequently used in cannabis extraction. The most popular hydrocarbons used for cannabis extraction are butane and propane.

Hydrocarbon extraction is commonplace in the production of personal care, pharmaceutical, perfumery and food products. In fact, practices currently being utilized in cannabis extraction are simply adaptations of methods used to create other household products. Hydrocarbons are optimal for the extraction of

cannabinoids due to a physiochemical similarity between hydrocarbons, cannabinoids, and terpenes: their polarity. Specifically, all of these molecules are generally non-polar. The non-polar nature of cannabinoids, terpenes, and hydrocarbons means none of these compounds can be dissolved in water. This shared feature also causes cannabinoids, terpenes, and hydrocarbons to be strongly attracted to each other. This attraction enables hydrocarbons to extract cannabinoids and terpenes more efficiently than other types of solvents. Moreover, it is the only solvent that can preserve the delicate terpene profiles of the flower.

In order to further understand the therapeutic effects of cannabis, affordable access to preparations of these terpene profiles is vital. Hydrocarbon extraction affords manufacturers to precisely represent the terpene profile of the plant in a concentrated form. Due to this, hydrocarbon extracts have experienced marked popularity among cannabis consumers. Consumer preference for these



extracts is a testament to the tunability of hydrocarbon extractions.

In addition to the natural attraction of cannabinoids and terpenes to hydrocarbons, these types of solvents are relatively **cheap, recoverable, re-usable**, and can be effectively implemented in **high throughput**

Benefits of Hydrocarbons

Recoverable

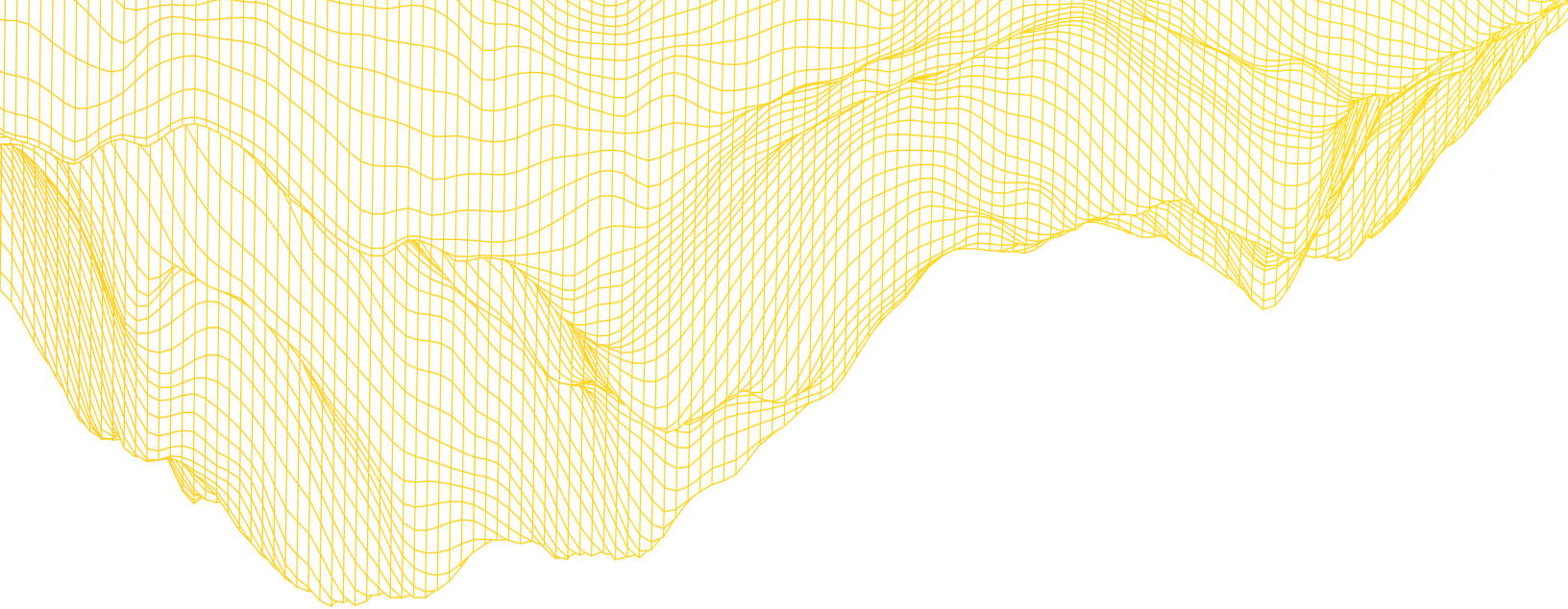
Cheap

High
Throughput

Precise

Re-usable

extraction setups. The use of hydrocarbons decreases not only the cost of materials, but also the labor hours required to produce high-quality extracts. This cost savings trickles down to the consumer, and ultimately, medical cannabis patients who utilize potent extracts for acute relief.



Safety Profile

Another important consideration when comparing extraction methods is the relative safety of the procedure. This safety profile begins with regulations at the manufacturing facility and extends to testing standards for residual solvents in the final product.

The legality of hydrocarbon extractions is essential for the maintenance of safe extraction setup parameters. Compliant hydrocarbon extraction setups are meticulously designed to prevent fires and explosions in collaborations with local fire departments. For instance, **all hydrocarbon extraction setups must be contained within a Class 1 Division 1 (C1D1) room.** C1D1 rooms must be spark-free, eliminating the risk of combustion. These rooms are also designed to continuously replace the air in the facility. Sensors are installed to detect when

the air contains 25% of the airborne solvent required to initiate an explosion. Upon detection of this low level of airborne solvent, an emergency HVAC system is activated, effectively replacing all air in the space as fast as possible. This low level of airborne solvent has also been determined to be less than half the amount of airborne solvent needed to cause harm amongst employees who may be exposed to it within the facility. Therefore, these parameters effectively prevent not only explosions, but they also **prevent exposure toxicity for employees.**

To address the safety of consumer, the acceptable limits of these solvents in the final product are currently being debated. For instance, the state of Colorado recently updated their standards to allow <5000 ppm of butane or propane in cannabis extracts in order to reflect similar safety standards in the pharmaceutical industry. Limits were previously set at <800 ppm of butane and <500 ppm of propane. This change in regulation reflects the need for more research to determine the limits at which these residual solvents can be hazardous to human health. In the meantime, producers are held to high standards by cannabis compliance testing laboratories which ensure very low levels of residual solvent are present in the final product.

Lastly, it is worth noting that there is additional value in hydrocarbon extraction due to its ability to preserve acidic cannabinoids which are sensitive to temperature and pressure. Other extraction methodologies often compromise the structure of acidic cannabinoids. Acidic cannabinoids include THCA, CBDA, THCVA, CBDVA, CBGA and CBCA. These delicate molecules are non-psychoactive and present unique therapeutic benefits which are currently understudied. Extracts which contain potentially significant amounts of these cannabinoids have untold merit in research and medicinal applications, further necessitating their production.

In conclusion, the proliferation of hydrocarbon extraction setups in the modern cannabis landscape is important for the maintenance of safety regulations for both producers and consumers. Suggestions of the prohibition of hydrocarbon extraction only promote the process be carried out without necessary regulatory oversight, further endangering the public. There is clear market preference for these kinds of extracts, both for their high quality and relative cost savings. There is also definitive value in tunable extraction methods which can be optimized for the extraction of compounds sensitive to heat and pressure. Therefore, it is important



to maintain hydrocarbon extraction practices within the modern cannabis market.

Taking these points into consideration, it is clear how Koby was able to convince the Canadian government of the inherent value of hydrocarbon extraction. Thanks to these efforts and Canada's collaboration, hydrocarbon extraction remains legal in Canada, improving safety standards for extracts as well as access for patients.