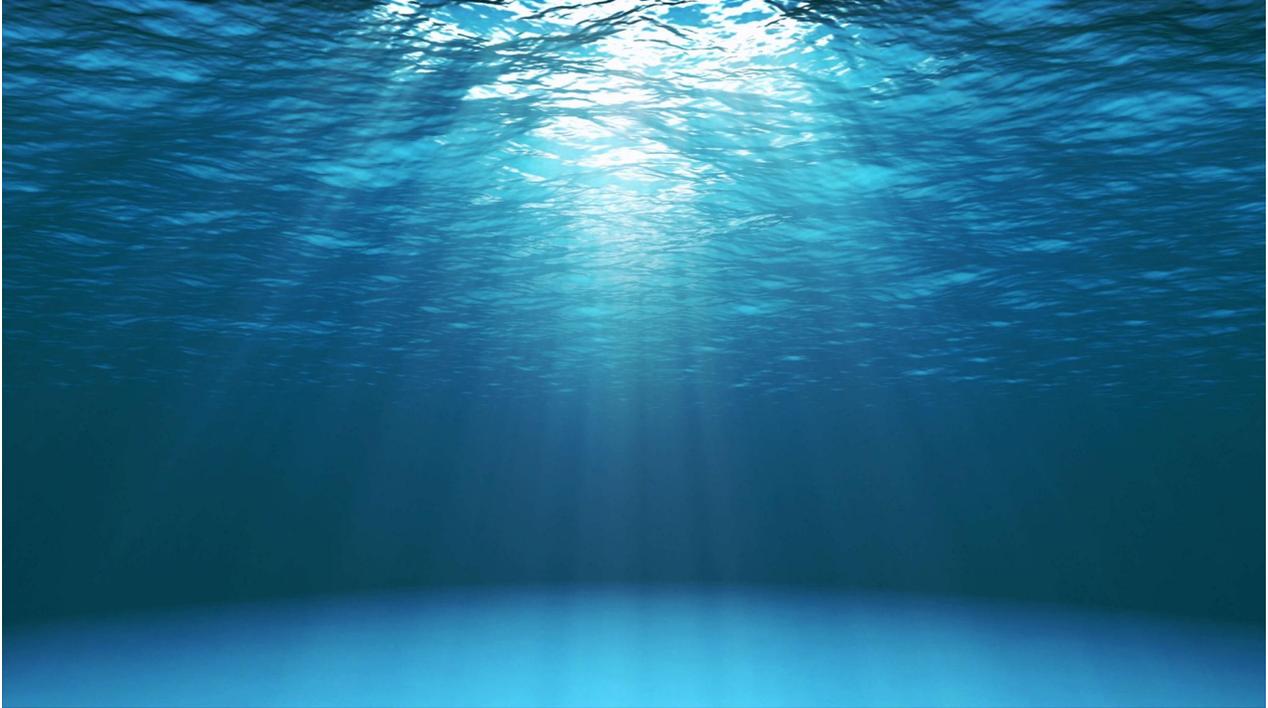


Purity Matters



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The cannabis industry [represented \\$25.7 billion](#) in global sales in 2021, with 263 million consumers globally. And it's not showing any signs of slowing down, with a projected CAGR of over 20 percent for the next decade. The sub-segment of THC-infused products—both recreational and pharmaceutical grade—is growing at an even more rapid pace. As demand for these products increases and global Consumer Packaged Goods (CPG) brands enter the space (accompanied by more sophisticated, discerning consumers), the requirement for consistent, high-quality input ingredients becomes increasingly essential.

When formulating THC-infused consumer products at CPG standards, ingredient purity matters (a lot). High-purity ingredients deliver safe, compliant, and consistent products. Many of today's Cannabis 2.0 products utilize distilled THC with 90–93% purity, meaning 7–10% or more of the input material typically includes impurities.

While high-purity THC distillates can be difficult to produce cost-effectively, levels closer to 100% purity are economically achievable by other means. For instance, **Protonify Corporation**, a Canadian Licensed Processor, produces botanical-based isolates utilizing a chemistry-based process that delivers THC and THCa extracts with the highest purity levels available. As a result, manufacturers of cannabis-infused products in the CPG, pharmaceutical, and recreational use industry segments are utilizing Protonify's high-quality ingredients to create disruptive retail products that meet strict manufacturing quality standards and enable consistent user experiences.

Read on to learn more about the importance of purity in manufacturing cannabis products and how to ensure you're using ingredients that make solid business sense.

Consistency is a critical business challenge in manufacturing

Manufacturing CPG products at an industrial scale demands that ingredients meet the highest quality standards in terms of purity, accuracy, precision, and consistency. Quality supply partnerships play a vital role—manufacturers rely on suppliers to deliver the same material each and every time. Without this consistency, providing the same high-quality user experience while meeting compliance expectations becomes difficult. Specific to cannabis-infused products, the inability of legacy THC ingredients to adequately address these issues has been a significant limiting factor to large, global CPG brands entering the industry at scale.

Legacy techniques that utilize distillation to create THC infusion ingredients limit purity levels to just over 90%. The composition of the remaining material is not well-defined. It could vary considerably, influenced primarily by the plethora of cannabis flower strains used as input material and the effect of the distillation process on that material. Analysis shows that a direct consequence of distillation is the presence of varying levels of isomers of Delta-9 THC which affect taste including Delta-8 and Delta-10 THC, and chemically-synthesized Delta-6 THC. Other impurities found in distilled THC include lipids, degradants (which accumulate over time), and other materials originating from the plant or introduced during the extraction process.

The detailed impacts of impurities on the user experience aren't well-defined. However, we know that they typically affect a final product's flavor, which is particularly important when manufacturing cannabis-infused beverages and edibles. A standard course of action to combat the bitter cannabis taste is to mask it with additives such as sugar or substitutes and artificial flavors. Unfortunately, these additives drive up the costs of a formulation and may be off-putting for health-conscious consumers. And because impurities vary from batch to batch, different levels of additives are required to maintain a consistent flavor. This can create manufacturing challenges, including increased production time, fluctuating raw material quantities, labeling churn, and compliance concerns.

Of course, all these issues impact the bottom line. Arguably, distillation-based cannabinoid infusion materials represent a significant barrier to entry into the industry for traditional CPG brands. The introduction of high-purity isolates changes this. By overcoming manufacturing challenges, the use of high-purity cannabinoids opens the door to a range of new, differentiated product revenue opportunities with lower end-to-end operating costs. High purity allows for simpler formulation, improved logistics, and highly efficient, scalable manufacturing processes.

Protonify Corporation uses a unique pathway to deliver high-purity, non-distilled THC—isolating THCa to purity levels approaching 100% and then decarboxylating into THC utilizing a set of proprietary processes. The result is the highest-purity botanical THC in the industry. Adherence to key manufacturing standards, including GMP, ISO, and HACCP, makes Protonify cannabinoids ideal for seamless insertion into traditional formulations, production lines, and supply chains. Protonify high-purity isolates infuse into existing product formulations without the need to mask unwanted flavors with expensive, unhealthy additives.

Pharmaceutical products demand high-purity APIs

Pharmaceutical product formulations rely on input materials that meet the stringent purity and consistency requirements established for Active Pharmaceutical Ingredients (APIs). Companies producing APIs must maintain purity levels above 98% while strictly adhering to Good Manufacturing Practices (GMP). The [FDA GMP Guide for APIs](#) provides an example of these detailed requirements.

Using input material with purity lower than the API standard for THC extract (<98%) presents multiple hurdles when formulating or researching cannabinoid-based pharmaceutical products. From a clinical perspective, researching the effects of THC or THCa when the dosage form is variable and not of API quality can be challenging. It can be argued that trial data may not be as robust if gathered from products that use inconsistent distillate-based THC input material.

It's also unclear how impurities will impact the bioavailability of the active ingredient; without knowing the impurity profile of the starting materials, it is challenging to predict if and how a drug manufactured with an impure active ingredient could interact with other drugs administered to a patient.

Conversely, pure isolates facilitate reliable testing and validation of therapeutic treatments, and high purity improves the ability to develop precise dosage forms that are optimal for bioavailability. Protonify develops APIs that strictly adhere to global pharmacopeia standards applicable to bio-pharma formulations for DIN, FDA, and EMA-approved drugs. These are ideal for use in research that requires reliably consistent, botanical-based ingredients with purity levels that enable precision dosage.

Protonify's high-purity THC is a perfect API for Dronabinol, an FDA and EMA-approved drug used by compounding pharmacists for multiple indications including treatment of anorexia associated with weight loss in patients with AIDS and nausea and vomiting associated with cancer chemotherapy. Indeed, Protonify's high-purity APIs open the door to a new category of true pharma-grade "medical cannabis" user products, including medicinal vapes, inhalers, tablets, and sublingual strips.

High purity is required to meet consumer demands

In its infancy, the cannabis industry has benefited from somewhat lenient regulations compared to other CPG segments. For instance, Health Canada has so far only [mandated that manufacturers](#) follow Good Production Practices (GPP) instead of GMP. Distillate-based THC extract products have not been able to achieve GMP standards.

As consumers become more conscious of issues such as safety and consistency and cannabis products reach new markets, we'll see closer attention paid to labels and increased demand for improvements in certain areas. For example, more consumers will likely be concerned with healthy alternative products and a consistent user experience. Manufacturing cannabis APIs that align with GMP quality standards is a catalyst for these improvements.

Similar to the alcohol industry, even if some segments continue to choose price over quality, the higher margins will lie with products focused on discerning consumers who value quality factors such as purity and consistency made to GMP standards.

Protonify overcomes challenges with high-purity ingredients

High purity reduces complexity and risk and increases consistency. Purer starting materials can remove multiple friction points and provide significant cost savings.

Protonify offers the highest purity THC and THCa ingredients in several formats, including dry powder and nano-encapsulated. The process produces a powder form of THCa, which can be used for recreational and pharmaceutical use cases or converted into pure THC. The dry powder format offers convenient formulation, shipping, and handling. In addition, beverage and edible product formulations benefit from the purity of Protonify ingredients with high stability when nano-emulsified.

Protonify's pure, consistent infusion ingredients also have recreational market use cases, enabling product formulators to offer a new set of higher-margin, differentiated product SKUs. High-purity isolates are an ideal infusion ingredient for infused pre-rolls, "Liquid Diamond" vapes, and edibles, and as stand-alone concentrates for dabbing and other "do-it-yourself" applications. The Protonify pathway is highly cost effective, especially in large, scalable manufacturing processes.

Purity matters. And Protonify's high-purity APIs provide existing industry LPs/MSOs and large, global CPG and pharmaceutical companies with the foundation for creating new, differentiated products and drugs that adhere to the strictest manufacturing standards at an industrial scale.



Protonify Corporation is a privately-held Canadian licensed global B2B manufacturer of highest-purity, CPG-grade cannabinoid isolates. Protonify's botanically-sourced cannabinoids are non-synthetic with purity approaching 100%. Available in several formats, including dry powder and nano-encapsulated, they fit seamlessly into traditional CPG formulation recipes, industrial scale production lines and supply chains and are the perfect foundation to enable cannabis product formulators and manufacturers to safely and reliably build brand affinity for consumer packaged goods containing THC and THCa. Manufacturing of Protonify ingredients strictly follow Good Manufacturing Practices (GMP) for extracted products, aligning with existing GMP / ISO / HACCP standards and are the foundation for the next generation of Cannabis 3.0 high purity products including Infused pre-rolls, beverages, vapes, edibles, sublingual strips and tablets.

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