

The future of CBD-infused beverages is bright

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Interest and investment in CBD beverages continues to grow despite some criticism of cannabis drinks in general; so far, the industry has struggled to get oil-based cannabinoids into water-based beverages without issues.

When Colorado's Mile High Labs launched its water-soluble cannabidiol liquid in June, it was billed as the "must-have product" that would "open the door" to mainstream consumer markets. Mile High's water-soluble CBD oil would herald a new generation of sports drinks, sodas, beers and teas that would deliver on shelf life, dosage and consumer appeal, the company claimed, while conventional oil-soluble CBD infusions have come under fire over their effectiveness.

Mile High forms one of an ever-growing band of big hitters to have adopted nanotechnology as the solution to CBD water solubility issues. Its approach involves dissolving CBD isolate or distillate into a colourless, flavourless, oil and then creating nanoscopic droplets of that oil with a high-pressure emulsifier.

The particles are less than 250 nanometres in size, Mile High says, allowing liquids to be integrated seamlessly with pre-existing products, and pass into the body's digestive system without being degraded by liver enzymes.

Different approach

Others, such as Trait Biosciences, have taken a different approach. The Toronto-based outfit has led the field among rival biotech projects that have been exploring alternative plant-based approaches to creating what they dub “truly soluble CBD”.

Trait is focused on genetically engineering plants to produce what the company claims are “truly water-soluble cannabinoids” produced in the plant; while also modifying their tissues so that all, not just the resin glands, produce hybrid cannabis-derived compounds.

At first glance, the market battle appears mismatched – Mile High raised \$35m from institutional and private equity investors in 2018 to develop its “premium CBD products” and fund its global expansion.

In April it launched sales into the UK and Europe; and in June, it took over a 400,000 square foot pharmaceutical production facility previously owned by pharma giant Novartis, that Mile High says is ready to roll out large-scale production to meet anticipated demand. In 2019, the company employs 180 people.

Mile High chief medical officer, Keith Aqua said: “Consumers are gravitating towards drinks without alcohol, that are low in carbohydrates and sugars, and that have benefits beyond hydration. CBD fits every one of these criteria.”

“In three years, CBD drinks will be a part of the portfolios of the world’s most widely known brands. In five years, it will be as ubiquitous as caffeine.”

Breakthrough

Trait, which bills itself as the sector's largest integrated bio-technology innovator, is a smaller company with a staff of about 40. While its current focus is still research, it said it was positioning itself for licensing or as an acquisition target and conceded it would need investors if it was to challenge the incumbents in the market.

It recently announced a breakthrough that may help it in that regard – it has successfully engineered hemp plants that it says are producing four times the normal amount of cannabidiol.

Trait also previously was awarded a US patent for its proprietary technology that uses a natural process to convert fat-soluble cannabinoids into cannabinoids that are tasteless, odourless, fully soluble in water and, it says, have higher bioavailability than fat-soluble cannabinoids within plant systems. Bioavailability is the proportion of a substance which enters the circulation when introduced into the body, and so is able to have an active effect.

But can a small research unit really scale up to take on the might of producers such as Mile High? Will consumers stomach genetically modified CBD? And can it compete on cost, or will it be a premium product? “We are in active dialogue with potential partners... [and] are exploring a number of different options for scale-up,” Trait chief strategy officer Rony Levy told CBD-Intel.

“The attributes of our Distilled [a Trait brand name] cannabinoids...gives us incredible flexibility in terms of product differentiation in the marketplace. [For example] our water-soluble cannabinoids can be produced in ways that are non-GMO [genetically modified], as well as using GMO strategies, so we can accommodate the preferences of a wide variety of audiences.

“At a minimum, we expect our Distilled cannabinoids to be a branded ingredient, akin to Splenda or Intel Inside.

“Companies are using nanotechnologies to mimic some of the benefits of water-solubility for purposes of creating products. But nano-emulsions are not [truly] water soluble and are not as easy to work with as water-soluble cannabinoids.”

Competitive edge

While questions remain over Trait's ability to translate its work into products, the fact that its processes avoid nano-emulsification could give it a competitive edge; this is because nano-emulsification also faces key questions in the longer-term. Can it deliver on its claims of boosting bioavailability by, some say, up to 70%? And does nano-emulsification itself pose potential health problems?

Critics claim there is little evidence to underpin the improved bioavailability claims of companies using nanoemulsions. Additionally, they say where nano-emulsions are used in foods and beverages there are risks of bioaccumulation of emulsifiers in the brain, cytotoxicity, and disruption to the immune system.

These potential risks, they say, should be assessed by regulators in the US, Canada and the European Union before products enter the market.

Mile High director of regulatory and compliance Wendi Young said animal studies had shown the technique enhanced absorption in the gut and lowered the "first pass" effect from the liver enzymes that would try to break down the CBD. But, she conceded, human analysis is needed, and declined to respond to concerns associated with the build-up of emulsifiers in the body.

However, the safety of nano-emulsification may be an issue the companies using it will have to address sooner rather than later.

The US Food and Drug Administration has turned the spotlight on the sector, [announcing its plan to research CBD products](#), their safety and the claims made by producers, saying it would take a rigorous, science-based approach to matters "large and small".

What This Means: Will nano-emulsion versus plant engineering for CBD solubility be the sector's equivalent of blu-ray versus DVD or VHS versus Betamax? Like those systems, both have advantages and drawbacks. For example, will a sector very much into alternative medicines and healthcare take to a product made through genetic modification? Will such a solution be commercially cost effective?

If so, Trait's work may prove to be a better solution from a technical perspective – and given the better claims on solubility and bioavailability it makes over nano-emulsions.

But then so often, price is truly king, and this may all be academic compared to the reality for consumers of an actual on-sale price.

– Steve Sampson *CBD-Intel contributing writer*

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