Project CBD update: the tango of supply and demand

By O’Shaughnessy’s News Service

Cannabidiol (CBD) is well on its way to becoming a household word. Increasing numbers of medical marijuana users know that the non-psychoactive cannabinoids dominant in hemp strains has important medical effects. CBD-rich plants have been crossed with one another and new strains of interest have been identified by labs. And, most significantly, extracts with measurable doses of THC and CBD are available.

Several offspring of the “Cannatonic” seeds originally provided to Project CBD by European allies were found to have a CBD-to-THC ratio slightly greater than 20:1. Similar CBD-THC ratios have turned up in plants identified by the growers as “AC/DC” and “Oracle.”

Most patients looking for CBD-rich medicine do not intend to smoke or vaporize it; they prefer tinctures or edibles for long-lasting effect.

“Project CBD played a big role in carrying the message,” says director Martin Lee. “We could not achieve a balance of supply and demand.”

 encoded as “AC/DC” and “Oracle.”

Cannabis News

Clones from these plants with 20 times more CBD than THC are being grown out in large quantities to meet the increasing demand for CBD-rich products by medical users.

Several factors contribute to the imbalance between supply and demand. Most dispensaries continue catering to a market Lee calls “Kushville,” and coveted buds with high THC levels. Many patients looking for CBD-rich medicine do not intend to smoke or vaporize it; they prefer extracts or edibles for long-lasting effect. Since extracts and edibles can be made from trim and leaf, there is strong demand for CBD-rich verdure. Trim that growers once gave away or sold for a minimal price to tincture and edible producers is now being bought by restaurants and edible producers.

ProjectCBD.org receives a steady stream of requests from would-be users and their family members — some casual, some desperate — wondering where they can obtain CBD-rich medicine can be obtained. The website, replete with introductory information about CBD, will soon be upgraded with new material, says Lee, who devoted himself to Smoke Signals for the past year.

Medical Use and “Kushville”

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CBD Strains From Europe

Grown out in California

Allies in Europe provided Project CBD with seeds from nine CBD-rich strains. Four seeds from each variety were grown out by a trusted friend in a small garden in northern California. He reports:

The seeds were started on April 20, 2012. The seeds were transplanted to pots on April 22nd with 100% germination. On June 20th, the survivors were transplanted into amended soil mix of garden soil and forest humus. Soil tests showed that they only needed supplemental nitrogen, which was provided by aged feather meal and bat guano. Once the soil warmed, approximately on July 1, the plants exploded into growth and only needed water and sunlight until flowering.

Flowering revealed that all plants were females. CBD Shark and Mango Haze seemed vulnerable to cold as they were grown out by a trusted friend in a small garden in northern California. He reports:

CBD Shark: Not a big plant, no problems with bugs or molds. Late to set flower first around August 5th, and finished first on October 1st. Heavy producer for such a small plant.

CBD Mango Haze: Strong sativa, no problems with bugs or molds. Late to set flower, never got real chunky and a late finisher. It wanted more time in the sun of October.

CBD Nordle: Strong and vigorous plant, no problems with bugs or molds. A good producer with a strong piney smell. Anecdotal evidence suggests it is good for pain relief, trimmed lovers it.

CBD Critical Mass: Only to plant any sign of powdery mildew and on one branch only, was next to a plant that had lots of mildew, not a CBD variety. Was free of any other problems and was the heaviest producer. Anecdotal evidence is of strong, stoney smoke.

CBD Outdoor Mix: A fairly good producer, but seemed the weakest of these varieties. One plant had a few spider mites, and the dreaded bud moth caterpillars were only interested in one of the all the plants in the garden.

CBD Yummy: Strong plant and good producer, late finisher that wanted more time on Oct 20th.

CBD Medi-Haze: Strong beautiful sativa that finished with fluorescent purple hairs on the flowers. Very nice smoke with heavy buds.

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CBD for more than 12 years. He has come for a milligram of THC in 2012 was approximately two cents; his cost for a milligram of CBD was six cents. ECF contracted with three growers to produce CBD-rich plants outdoors. They grew “strains of our design derived from Harlequin, Omrita, and Cannatonic,” he says. Hosapodor says he pays less than the $1.50 per pound that growers had hoped for when negotiations began.

Andy Hosapodor with ECF chocolates. The Electric Chocolate Factory makes a candy said to contain 10 milligrams of THC and 10 of CBD—the same 1:1 ratio found in Sativex, the cannabis-extract spray that G.W. Pharmaceuticals markets in Canada and Europe. “We made a decision to blend some CBD into everything,” Hosapodor says. ECF’s high THC chocolate contains nine percent CBD. Hosapodor’s commitment to making accurately dosed medicines is much appreciated by medical users of cannabis. “It’s really about educating the patients,” Hosapodor notes, is also used by the food industry to extract soy proteins. The solvent can be recovered and reused repeatedly but hexane is neurotoxic and a byproduct, and any residue is problematic. A lot is riding on the skill and integrity of the analytical chemists testing cannabis for the emerging industry.

ECP sends batches of oil to Halent Labs for testing and refines them to produce desired ratios of THC: CBD. “We donate medicine to Laguna Honda’s hospice ward and cancer ward,” Hosapodor told the SCC. “We figured we’d do good and try this,” he said. “We’ve been doing it for a couple of weeks and I’ve talked to a supervisor and said ‘You’ve got to tell the patients that this is a prescribed—yes, you don’t just use it till you feel high.’”

“She said, ‘You know, the nursing staff here knows how to administer medicine. What you have is eight times as many patients as when you started.’”

Statewide Collective
In early 2012 a group called Statewide Collective was launched in Los Angeles to provide patients with CBD-rich extracts. Statewide grew out CBD-rich clones provided via Project CBD and is now making them available to medical patients. A Marin County grower who joined Statewide told us, “I grew 20 plants for those, which they pitched when they were drying. I hardly had to trim it. For every two liters produced from your plants, you get a liter for your family. Which is a bit of medicine. Or you can be reimbursed by patient-members.”

Statewide’s CBD-rich extracts are diluted with sterile water, glycerin, and alcohol for preservation and spray-ability. They are made available in five- and 30-cubic-centimeter spray bottles of dark glass. They can be taken sublingually (sprayed under the tongue) or orally (with the extract dissolved in water and swallowed).

The original cannabis composition in Statewide extracts was 7.2 milligrams per milliliter, but a decision was made to adjust it, based on the instructions of members growing CBD-rich plants. “Making a stronger tincture represents a break for patient-members at the expense of grower-members,” says our source. “Patients get twice as much medicine for the same price. We get half as much for our pounds. But the sense that you’re doing something righteous means a lot, and so does staying away from knocking on dispensaries’ doors.”

Statewide uses supercritical carbon dioxide to make its extractions. At a certain temperature and pressure, carbon dioxide retains the density of a liquid while expanding to fill its container like a gas. The oil containing extracted cannabinoids and terpenes, after some cleaning, dewatering and decarboxylating, is sent to the Werc Shop to determine its cannabis and terpene content. The DEA from the from the SCC that this first hand when my mother went through a PET scan. The way they determine the spread of metastatic cancer is: inject you with a sugar dye that is metabolized it goes to the cancer sites in the body and fluoresces.

We encourage all the people who work with our oils to make products that are sugar-free, dairy-free, and gluten-free, and to use nuts and berries. We want to have medicine that can be used by everyone, including diabetics.

ECP uses hexane as a solvent, extracting terpenes and flavonoids from plants along with the THC and CBD. But hexane is neurotoxic and a byproduct, and any residue is problematic. A lot is riding on the skill and integrity of the analytical chemists testing cannabis for the emerging industry.

The psychoactivity of an extract is not simply a function of its THC content or other Medical Marijuana, Inc. states that it “does not grow, sell or distribute any substances that violate the United States or the controlled substances act.”

Medical Marijuana, Inc. Pitching CBD Products
By Martin A. Lee
Denver-based Dixie X Eliixis and Edibles recently launched a new line of ingestible CBD products to complement its line of food-stuffines, tinctures and creams infused with THC.

Dixie X, founded in 2009 to serve the Colorado market, is operated under the umbrella of Medical Marijuana, Inc. (MJNA), a publicly traded start-up founded by Bruce Perlowin and based in San Diego. In the 1970s Perlowin was busted for shipping marijuana into the United States and spent seven years in prison. He is no longer officially associated with Medical Marijuana, Inc., but he’s a key player in Hemp, Inc., another start-up company traded on the OTC stock exchange.

In october 2, 2012, press release, Medical Marijuana, Inc. estimated the “CBD and wellness industry” to be “a $5 billion market.” Dixie Eliixirs, MJNA’s de facto subsidiary, is the first business for mass market CBD as a “wellness product.”

In the spring of 2012, Dixie X entered into a licensing agreement with Red Dice Holdings, another subsidiary of Medical Marijuana Inc. Dixie owner and managing director Tripp Keber is president and CEO of Red Dice Holdings and a board member of Medical Marijuana, Inc. “I make companies to sell companies. Make me an offer, and I’ll ride off into the sunset with satchels of gold,” Keber told The Daily Beast.

The legal status of CBD is somewhat muddled. The arrangement between Dixie and Red Dice is structured so that Medical Marijuana, Inc. is able to utilize only the CBD in the licensed creams, whereas MJNA eschews responsibility for Dixie’s THC products.

In September 2012 Michael Llamas, Medical Marijuana, Inc.’s president and CEO, was indicted by the federal government and charged with running a $17 million multistate mortgage fraud scam. Although industrial hemp contains more CBD than THC, the overall cannabis content of hemp plants is much lower than what’s found in CBD-rich marijuana strains. The kind of CBD-rich plants being grown for the medical market in the U.S. produce much more cannabinoid than fiber hemp plants.

Medical Marijuana, Inc. says it circumvents the federal prohibition by extracting CBD from industrial hemp—not from marijuana—that is grown outside the United States in five different countries. MJNA doesn’t disclose which countries. The initial extraction is performed by another Medical Marijuana, Inc. subsidiary, Phytosphere, which provides raw hemp paste to Dixie X and its sister firms. Like all industrial hemp, hemp legally imported into the United States contains CBD paste apparently contains a minuscule amount of THC, hence it’s legal to bring it into the United States, according to Dixie officials.

Once they receive the crude hemp extract, Dixie personnel refine, purify and filter the paste, turning it into the CBD oil that eventually goes into three Dixie X products: Dixie X Dew Drops (a tincture), Dixie Scraps (granulated powder in a capsule), and a topical “pain relief salve.”

Project CBD received samples of the Dixie Scraps capsules and the Dixie X tincture.

(two) continued on next page
THC/CBD ratio — terpenes have a big impact. Terpenes are volatile, aromatic compounds that interact synergistically with THC, CBD, and dozens of minor cannabinoids in a way that can enhance, reduce, or diminish their effects. Certain terpenes bind directly to cannabinoid receptors, while others dilute capillaries in the lungs, which enable CBD and THC to enter the bloodstream more easily. Significant progress toward objective determination by sampling each batch of extract and assuming a uniformity in terpenes that allows for higher scalability has been made toward objective determination by sampling each batch of extract and assuming a uniformity in terpenes that allows for higher scalability.

These numbers range from one (no psychoactivity) to 10 (very strong) and are prominently displayed on every bottle. Allan Frankel, MD, who has treated many Statewide members, observes, “There are some symptoms, such as pain with Multiple Sclerosis that appear to respond very well with CBD. But nocturnal symptoms such as a — also a symptom of MS — seem to respond to THC, as well as the other factors that are unknown. And as always, we expect to see individual-to-individual differences.”

Frankel’s patients are encouraged to start with a single spray (2 mg of whole-plant CBD under Statewide’s new formulation). He says: “A relaxed feeling is generally the first thing to be noted. This typically takes under five minutes to onset and will be followed by increased focus and clarity. Maximal benefit of sublingual use will be present in around 30 minutes and can be expected to last up to eight hours.”

At 20 mg per spray, Frankel’s patients report that two milligrams of whole-plant CBD sprayed sublingually twice daily relieves the majority of anxiety, pain, insomnia, frequent awakenings, and depression. He says: “A relaxed feeling is generally the first thing to be noted. This typically takes under five minutes to onset and will be followed by increased focus and clarity. Maximal benefit of sublingual use will be present in around 30 minutes and can be expected to last up to eight hours.”

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The 24-to-1 strain(s) are most appealing for producers of extracts and edibles. Statewide Collective’s grower-members are being provided with clones. Mature females are harvested with parts from a CBD-rich “Harle-Tsu” plant (a Harlequin-Sour Tsunami cross) bred by Lawrence Rings of Sohum Seeds. In its vegetative state this plant had a CBD:THC ratio of 1:61. Therefore, Dixie’s CBD products might be the only way they can access cannabidiol, especially if Medical Marijanna, Inc. is able to market its products nationwide.

Whether Dixie’s CBD products are ultimately successful in the marketplace may come down to a matter of cost-effective- ness. Dixie’s CBD products are being sold on a dose-per-dollar basis to justify Dixie’s asking price when more concentrated CBD extracts, infused with a synergistic bouquet of cannabinoids, are becoming available in states where medical marijuana is legal.

In the absence of these data, we find this message from Dixie Botanicals on their website: “We have revised our labels for our small containers to note that they do not have enough room for the Supplemental Facts box.”

Thus there is no indication of how much raw CBD is presented in small containers, but consumers can allegedly learn “the proper serving” by visiting Dixie’s website.
CBD Shows Promise vs. Brain Cancer

Ability to stop spread of cancer could extend beyond breast cancer to brain cancer despite significant differences between the two malignancies.

Researchers at California Pacific Medical Center Research Institute (CPMCI) have found that a cannabinoid in cannabis previously shown to decrease metastatic breast cancer now shows promise in stopping aggressive brain cancer as well. The findings are particularly important given the safety of the cannabis compound and the fact that patients with advanced brain cancer have few options for treatment.

“These findings offer some hope in an area where there’s been very little, and give rise to the idea for the Quantacann from an equip.

The grower of the strain that Halent received from Steep Hill president David Lampach got the idea for the Quantacann from an equipment salesman who described their use by brewers in connection with grain purchases. Steep Hill has begun testing for terpenes, and has leased a headspace sampler that will enable more detailed reporting.

Linker is concerned about the growing popularity of BTHO (butane hash oil). “Terpenes are incredibly important,” says Steep Hill co-founder Addison DeMoura. “One reason butane is used as a solvent, despite its dangers, is that it’s cold and pulls out the terpenes.”

The method allows for a CBD:THC ratio of 10-to-20 fold improvement in the ratio of CBD to THC, with each pass. For example, with Harlequin, two passes were required to achieve at least a 150:1 ratio. With Harlequin, only one pass is necessary for the inclusion of other meaningful cannabinoids like CBG, CBC and CBN, and the stability of the terpenoids concentrated in the ethanol, for long-term storage.

Another way to get CBD?

Steep Hill’s deCesare says, “Scientists affiliated with Halent have developed a chromatographic method that separates THC from CBD, working about half of the associated entourage intact with the CBD-containing component.”

A column containing sorbent resin is conditioned with dilute ethanol and the concentrated essential oils are added, followed by separation with more concentrated ethanol, and fractions are collected. The first few fractions contain only a little of anything, with CBD (along with part of the minor cannabinoids) being collected in the middle fractions and THC coming out near the end. Fractions with desirable ratios are then recombined, boiled down again to remove most of the ethanol and water, quantitated and finally reductively to an appropriate dosage and volume. Since this was being done for young children, a target range for CBD of 5mg to 100mg per milliter of ethanol (and very low total delivery of alcohol).

When properly constructed, the column yields a 10- to 20-fold improvement in the ratio of CBD to THC, with each pass. For Cannatonic C-6, only one pass is necessary to achieve at least a 150:1 ratio. With Harlequin, two passes to re separated to achieve a 1:1 ratio.

The added advantage in fractional collecting, “is the ability to selectively remix the ratios desired, the inclusion of other meaningful cannabinoids like CBG, CBC and CBN, and the stability of the terpenoids concentrated in the ethanol, for long-term storage. The separation method has not been employed on large batches — runs have involved less than five grams, done on a bench-scale format parent company, Linker expects all to go well.

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CBD-V As a Treatment for Epilepsy?

Researchers led by Ben Whalley at the University of Reading reported in the September 2012 British Journal of Pharmacology that cannabidivarin—CBDV—suppressed seizures in animal models of epilepsy. Whalley et al were testing PURE CBD or a CBDV-rich extract developed by G.W. Pharmaceuticals. CBDV also proved effective in combination with currently used anti-epileptic drugs.

Whalley told the university’s news service: “There is a pressing need for better treatments for epilepsy. It’s a chronic condition with no cure and currently in around one third of cases, the currently available treatments do not work, cause serious side-effects and increase fatalities. Currently prescribed drugs to prevent fits can cause significant side-effects to individuals’ motion and cognitive abilities that can adversely affect the quality of life for people who have to take them every day. “Our work has highlighted the potential for a solution based on cannabimind science... Cannabidivarin is the most effective and best tolerated anticonvulsant plant cannabinoid investigated to date.”

Whalley and colleagues are now trying to figure out the mechanism of action by which cannabidivarin works to reduce seizures. GW hopes “to advance CBDV into human clinical trials” in 2013, according to R&D director Dr. Stephen Wright.

Labs Declare War on Dirt

The Association of California Cannabis Laboratories (ACCL) recently conducted its first round of validation testing. According to CEO Bob Martin of CW Analytics, nine member labs received identical liquid samples containing known quantities of THC, CBD, and CBN. When the labs’ measurements were compared, says Martin, “the values clustered together, except for one lab that had machine issues that week. We’re working with them to help resolve their problem.”

Safety is another ACCL goal. Labs occasionally encounter Cannabis samples containing microorganisms that are associated with filth and can cause disease. The level can become concerning, Martin says, if bubble hash isn’t properly processed, handled and stored. “If you concentrate a product of the earth, you can concentrate dirt,” he observes. “We don’t see this problem in oils that are made with alcohol or waxes made with butane— they’re microbiologically cleaner.”

The ACCL works with California hash makers “to help them clean up the way they handle their shake and the way they process and store their product. We work with vendors, go back through the process, and determine where it was contaminated. Ninety-nine percent of the time we find the smoking gun and they mobilize and do whatever it takes to fix the problem.”

“In 30 years working in the food industry,” Martin adds, “I never saw that. When notified of a problem, people would usually respond with denial or blame. In this industry, everybody wants to find out why it’s dirty and how to clean it.”

Martin is frankly proud of the trade association, which he helped launch in 2009 with David Lampach of Steep Hill (who is the ACCL president) and Jeffrey Raber of the Werc Shop (now the CFO). “When it first started the labs wouldn’t talk to each other,” Martin reflects. “Now we have a forum where we can air our grievances. It’s really wonderful, a mature way of dealing with things. We hope we can provide an example for the rest of the industry: collaboration is the way to win.”

CBD in Colorado

New therapeutic opportunities are possible in the Rocky Mountains now that marijuana has been legalized for adult use. The Colorado “Free for All” program has announced plans to give away CBD-rich plants to anyone 21 years old in Colorado “who wants to try using CBD to prevent disease and increase their long term quality of life.” Participants will cultivarseed plants with the expectation that they will clone them and gift them on to others. “People no longer have to wait to get sick before they can use CBD legally,” Can-natech volunteer Bill Althouse explained.

Scheduled for launch in Denver in mid-February, the CBD-rich “Free for All” will be accompanied by educational events about the potential benefits of CBD. Those who receive a free plant will be encouraged to participate in a long-term study of the use of CBD as a preventative medicine. For more information, contact info@cannatech.coop. And for updates and announcements about the CBD-rich Free For All, follow Project CBD on Facebook.

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