CANNABIS AS A SUPERFOOD

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I have a life long problem with my body reacting negatively to various foods, supplements, vitamins, and medicines. The list started with milk in third grade (back in 1947) and has grown to include coffee, tea, bananas, chocolate, ice cream, aspirin, Tylenol, vitamin C, and others. I react badly to most medicines, at least in standard doses. Doctors do not believe me, so rather than being made sick or even dying from an overdose, I just do not ask doctors for prescriptions. It has been over 30 years since I had a family doctor. I eat a limited diet, consuming as much as possible out of my personal organic garden. I am open to the idea of trying other foods that have some possibility of containing nutrition that my body needs. My main physical complaints are chronic lower back pain, poor sleep, and Electromagnetic Hyper Sensitivity (EHS). The latter causes pain and a general sense of unwellness throughout my body after exposure to WiFi and cell phones.

There is a little chatter on YouTube about cannabis/marijuana being the next superfood. Certainly millions of people enjoy the THC component, and more millions swear by the CBD fraction. I am not interested in getting high, and am concerned about the chemical signature from the CBD extraction process not agreeing with me, so thought I would start with consuming the plant directly in raw form, like kale. I have been eating cannabis in various forms and amounts since July 2020. This is a preliminary report on my findings.

It is legal in Colorado for a person to have up to 12 cannabis plants in the greenhouse or backyard for personal use. I acquired some cannabis seed from a friend, started them under a grow lamp, then transplanted them outdoors on my property after the last frost. The soil is poor and sandy, with large amounts of rabbit manure added. It has always been undeveloped desert, so there is no concern about herbicides or pesticides.

The plants grew like the weeds they are. They were shredded by hail at about 6 inches tall, and bounced right back, bushier than ever. One plant outside the garden fence got browsed by a deer and came right back.

I spent some time on YouTube to learn a bit about growing cannabis. Something I had not known earlier was that it has two genders, male and female. It is possible to stress a female plant producing seed such that the seeds only produce female plants. People growing for the recreational outlets will try to grow only the female plants because the buds will get larger and produce a better high if they do not have fertile seed inside. Such seed from high quality strains can be expensive, up to $10 per seed, or more, in small quantities.

My free seed produced both genders, in approximately equal numbers. The genders look exactly alike, at least to me, until they reach puberty. Some YouTube videos suggest this happens after a few weeks of growth and at heights between 1 and 2 feet. In my case it was more like 10 weeks and a height between 2 and 3 feet. People who want to smoke the buds will destroy the male plants as soon as gender is revealed.

In my case, I want to eat both the leaves and buds. My first assumption was that the male plant would be nutritionally the same as the female, so having both genders would not be a negative factor. However, a little more reading on the Internet suggested that that might not be the case. Apparently the female produces far more cannabinoids than the male, and the quantity, quality, and ratios of these vary substantially during the flowering stage. If our bodies need cannabinoids, as opposed to other nutritional components, then we may find that females are better food, and the nutritional value may vary from one week to the next during the flowering stage.

JUICE

So how does one 'eat' cannabis? The first suggestion on YouTube is to juice the leaves. There is a doctor in Luxembourg who treats patients with cannabis juice, with success in some very difficult cases. One problem is that cannabis leaves are 'dry' (not much juice). A dozen kale leaves will yield a good swallow or more of juice. A dozen cannabis fans will hardly make the first drop out of the juicer. The doctor in Luxembourg spoke of juicing an entire cannabis plant every day for every patient. (He did not say how big the plant was). My guess is that his plants are half grown, 2-3 feet tall and 2-3 months old. He would need a sizable greenhouse facility to grow enough plants if he had very many patients.

Another problem is that the juice tastes bad, significantly worse than kale juice. At least I did not see any video where the person claimed to like it. The juice needs to be mixed with something like carrot juice to make it somewhat palatable.

Standard wisdom is that an unheated plant contains THC in the form of THCa, which does not make people high. The plant material needs to be heated to convert THCa into THC, either by smoking or by baking into food. As long as standard wisdom applies, one can drink as much cannabis juice as he likes, without effect on his mind. (His gut is another issue!)

Standard wisdom may not be 100% correct in this case. There is a man with hundreds of YouTube videos, who sells juicers for a living, and claims to drink juice from at least a pound of greens every day, who has a recipe that made him high. It involved juicing equal parts cannabis, fresh coconut meat, and another item that I do not remember. Perhaps there is a cold temperature method of converting THCa into THC, using only whole foods. This could be of interest to those who are concerned about the negative health effects of cannabis smoke on the lungs. I do not like coconut so will avoid that in any recipes, and hopefully not have any unpleasant experiences in getting high.

Juicing implies the liquid in a plant leaf has more nutritional value than the solid portion. Another hidden assumption of juicing is that the nutritional density is low, such that a large amount needs to be consumed, more that would be acceptable for the solid form. It seems to me that we do not know such things about cannabis. Perhaps we need to dump the liquid and eat the solid portion. Perhaps the proper nutritional balance is only obtained by eating

the entire leaf/bud. Or perhaps the proper dosage is a tiny amount. I will let someone else explore the ends and outs of juicing cannabis.

A nontrivial factor in my case is the difficulty of cleaning a juicer. I want to make sure that some simpler/easier food preparation technique will not yield adequate benefits before settling on this practice.

RAW LEAVES

Besides juicing, there is the option of just eating the cannabis leaves, like kale or lettuce. I started with four cannabis fans at lunch, then jumped it to six when no immediate ill effects were observed. With a dozen plants, a given plant only needs to provide lunch once every two weeks, not a problem to long term plant growth.

In my opinion, eating raw cannabis leaves will *not* become the next health food fad. The texture and favor remind me of eating oak leaves or grass clippings. Some health nuts will be able to do it, but not the majority of us. At least one of my plants actually burned my mouth. I could still feel it an hour after finishing lunch, a somewhat unpleasant sensation.

With no greenhouse, I can only eat fresh cannabis (or drink its juice) from say July to September in Colorado. Given its bad taste and the burning of my mouth, I decided to not explore the eating of the raw leaves any further.

FERMENTATION

A historical method of extending the season with vegetables is fermentation. I bought a book on fermenting: *The Art of Fermentation* by Sandor Ellix Katz, and went to ACE Hardware and bought two ceramic crocks, one gallon size, with weights to hold the fermenting material under liquid and away from air, for about $40 each. Ideally, the plant contains enough juice that with enough chopping, crushing, and compression, and about 2% salt, no added water is necessary. This is just not possible with cannabis. Either we add water or we blend in another vegetable that contains more juice. Given the taste and texture issues, blending sounds like a good idea.

Batch #1 was 18% male cannabis, 18% kale, and 64% cabbage. It was crunchy, not unlike cole slaw. Sea salt at the 2% level did not make it taste at all salty. If it seems to help healthwise, I might try 3% or 4% sea salt another time. I would call it edible, particularly if it has health benefits.

Batch #2 was 60% male cannabis and 40% zucchini. Texture, color, and taste were similar to cooked spinach. The person eating cooked spinach only on rare occasions might have trouble telling the difference. Batch #3 was 26% male cannabis and 74% yellow crookneck squash.

I was careful to use only deionized water. Chlorine kills the microbes necessary for the fermentation process.

The fermentation book did not mention foam produced during the fermentation process as an issue. I filled the crock to within an inch of the top for batch #2, so the top of the weights was level with the top of the crock. The crock was placed inside a large plastic dish pan. The contents foamed for 4-5 days, running over the top of the crock into the dish pan, at least half a cup of liquid. The white bottom of the dish pan is now permanently stained a nice green color. I assume that either cannabis produces more foam than other foods, or that I missed a piece of 'common knowledge', like "Everybody knows you always leave a couple of inches of headroom for foam in any fermentation crock".

Later I made a ferment with no cannabis. It was 51% cabbage, 40% carrots, and 9% kale, by green weight, with 2% sea salt. After a week it tasted decent. People who might eat cole slaw or a carrot stick without their mother threatening them would probably be able to eat a standard portion. There was absolutely no foam involved for the whole week. I wonder if cannabis has some component that causes the foaming?

Still later I made a ferment with only cabbage (sauerkraut). Again no foam. After two weeks the texture reminded me of cole slaw (crunchy). After two months, the top of the crock was covered with mold. I removed the weights, scraped off and discarded the top half inch of sauerkraut, and put the remainder in quart jars to be refrigerated. Now it was much softer, more like cooked sauerkraut. The flavor was quite acceptable.

Preparing the cannabis leaves for fermentation is tedious. I harvested the entire plant from the garden with pruning shears. The stump, the stalk at soil level is on the order of an inch in diameter, and tough, so good quality, long handled pruning shears are in order. I brought the plant inside and used scissors to cut the fan from the fan stem. One bushy plant about 3 feet tall weighed 850 grams when harvested. I removed 340 grams of leaves, leaving 510 grams of woody material for the compost pile. The leaves must then be shredded and crushed for the fermentation process to proceed. I used an old electric shredder for the first two batches. It tended to clog up. I then used scissors for the third batch, which worked OK except for being tiring to the hand muscles. I did use the electric shredder for the yellow crookneck squash on the third batch, and it worked very well on the squash.

I would eat somewhere between 30 and 75 grams of a batch for lunch, and then observe effects. I consider these small to moderate amounts, say one bite to three bites. I am confident that the same amounts of spinach or kale would have no effect on me. I thought it unlikely that male cannabis would have strong effects for these small amounts. I was wrong! This plant is potent medicine! Once or twice I felt *really* good for several hours, followed by a crash. Several times I felt dizzy after a period of a few hours. Sometimes I just felt medicated, too many chemicals in my body. Chest pain was observed once or twice. Sleep was sometimes good and sometimes not. After doing testing with other forms of food preparation, described later, I now believe I was overdosing myself. Another season, I might try a ferment with no more than 5% cannabis where a 'normal' helping would have health benefits without all the disadvantages.

Several weeks later I checked Batch #2. Color of the liquid had changed from a light

canned spinach green to an ugly dark brown. Odor had also changed, to something more unpleasant. A very small taste was also bad. The Fermentation book mentions the ferment spoiling after some period of time, especially if the ambient temperature is high. The average temperature of the ferment has been about 75^{o}F, which is definitely high for long term storage. To the recycle bin!

I was able to clean the crock itself with typical kitchen detergents and steel wool. It took a fair amount of elbow grease. But the ceramic weights, necessary to holding the ferment below the liquid level and away from oxygen, had stains that just plain refused to cooperate with kitchen cleansers and steel wool. I was concerned about some toxin lurking in the stain, able to quickly destroy all future ferments made using those weights, so I checked the Internet for wisdom about how to clean stains from ceramic. The first chemical mentioned was muriatic acid, used for etching and cleaning concrete. I poured enough in a corner of a dishpan, full strength, to cover one weight and let it set a few minutes. It still took significant effort with steel wool, but now the weights look clean. This should definitely be done outside with rubber gloves! The Internet also mentioned using hydrogen peroxide. I did not try that.

My initial impression is that fermenting cannabis will be practiced only by those who really need its special nutritional benefits. It is tedious to prepare and the crocks are heavy, expensive, and take up a lot of space. At some point the product turns to mush or slime, unappealing even if still healthy. This would typically be in a few months, unless refrigeration is involved.

DRY LEAVES

The problems with ferment suggests that we take a close look at the possibility of drying the leaves for long term preservation. We just harvest the entire plant, trim off the brown or yellow leaves, and hang the plant in a drying shed. When the leaves are sufficiently dry, we mechanically crush them to powder. The powder can be added to a variety of foods and drinks, as desired.

This means that whatever volatile organic compounds (VOCs) contained in the leaves will evaporate and be lost during the drying process. Certainly the dry leaves and buds contain medicinal value, as shown by those who smoke marijuana for medical reasons. But might it be more potent in the green state? Or less potent or just different? There are probably people who have researched this question carefully. If so, their work did not pop up on YouTube in the first couple of hours of surfing the web. In any case, I will add a data point to the research that has been done, in reporting the effects of unheated cannabis leaves and buds on me.

I harvested two male plants, just showing gender, at the end of July. The total green weight of each plant was about one kilogram. They were hung up to dry in my shop, relative humidity 35 to 40%. The leaves were dry enough to crumble when rolled between hands after a week. After the leaves were crumbled, I forced them through a metal sieve/strainer/colander purchased at a hardware store. The wires of the sieve are spaced about 2 mm apart. This

sieve is a hemisphere about 8 inches or 200 mm in diameter. The bigger stalks that did not readily pass through the sieve were discarded. The final output was a fine powder, with an attractive green color. The dry weight of the leaves was about 11.5% of the green weight of the plants. An empty 32 oz (907 gm) yogurt container easily held 124 gm of powder. A heaping teaspoon contained 1.8 gm, while a nearly level teaspoon contained 1.1 gm of cannabis.

In early August, I harvested two more male plants, with pollen sacs well developed (almost ready to open). After a week of drying, the leaves were converted to powder.

I then ate two heaping teaspoons of this dried mature male cannabis on my sprouted wheat bread, butter, and strawberry jam sandwich every day for a week. I had trouble telling that the sandwich was different, making this a relatively painless way of swallowing cannabis. My chronic lower back pain was better. Sleep was better. I also felt more energized and more optimistic.

Then side effects started appearing, depression, a general feeling of being unwell, and chest pain. The chest pain feels more like acid reflux burning than heart or lung issues. Perhaps the dry leaf powder has sharp edges, which irritate the esophagus on the way down. Quite possibly I was exceeding the proper dosage for my body.

It appears that even male, unheated, cannabis leaves have compounds in them with side effects for we sensitives. Perhaps a similar case is wine, obviously nutritious, but with side effects that dictate quantity and timing of consumption.

SEEDS

Another form of food would be seeds. After harvesting the excess males, I had a sturdy female plant immediately adjacent (3 feet apart) to a slightly smaller but healthy looking male plant. The seeds appeared on the outside of the buds in due course. I harvested the male plant as soon as it was obvious that its mission had been accomplished. It yielded 88 grams of dried leaves and pollen sacs.

We had 6 inches of snow on 9/7/20, which broke some of the branches of the fertilized female plant. I harvested the broken branches, let them dry for a week, and started the tedious process of crushing the leaves by rubbing between my hands, then separating the seeds from the crushed leaves. I noticed that my hands got rather sticky, and the substance would not wash off with ordinary hand soap. It easily came off with a small amount of GoJo, a solvent used by mechanics to remove grease. I used the metal strainer described earlier, to do an initial separation of seeds from leaves. I would forcefully rub the mix into the screen with my knuckles. This left a significant amount of leaf pieces in the seeds. I did a final separation with a flat bottomed plastic dish pan. The action was similar to panning for gold. The round seeds would easily roll to the opposite side of the dish pan, while the flatter leaf pieces tended to stay in place. I counted out 100 seeds and weighed them at 1.1 grams.

I harvested the remainder of the female plant about two weeks later. It produced a total of slightly over 450 grams of seeds, some brown (ripe?) and some of a greenish cast. I sorted out

100 of the brown seeds, weight 1.5 grams. That means this one plant produced over 30,000 seeds! The seeds are about 3 mm (0.13 inches) in diameter. I was able to get 27 seeds into the larger portion of an empty supplement capsule.

I started testing of the seeds by swallowing 13 seeds with water, no chewing, no crushing. The concept is that the gut should be able to extract some nutrition, in a kind of slow release form. The next day I swallowed 20 seeds. My body said that was too much so I cut back to 10 seeds at breakfast time for several days.

Observations included getting very sleepy after lunch. My gait was impaired in the evening. The feet did not go exactly as they usually do. Once I woke up with chest pain, which went away by mid morning.

It appears that 10 seeds are too many. I reduced consumption to 2 to 5 seeds per day. That would be perhaps 30 to 75 milligrams. Note that baby aspirin contains 81 mg. Cannabis is potent!

BUDS

I had two younger, smaller female plants in the compost pile 10 or 15 feet away from the male plant. It was possible that they were not completely fertilized. Fewer seeds means more of the plant's energy goes toward producing THCa. Having any seeds at all reduces the value on the retail market, but I was not planning to sell or smoke any of the product anyhow. The buds would have a different chemistry from anything else I had harvested, so I decided to imitate my pothead friends and prepare some buds.

One is supposed to wait for the bud to attain a certain color and 'stickiness', as explained by dozens of YouTube videos. The plant is then harvested. Special scissors are used to trim all the leaves on the plant, including the small leaves growing out of the buds. The stalk with attached buds are hung up to dry in (ideally) a 50% relative humidity environment. My shop was about 30% RH. It took only four or five days to dry. The buds are then clipped from the stalk and placed in glass jars for long term storage. I had about 400 grams of buds from the two small plants. I saw one place on the Internet that the average retail price of medium quality buds in Colorado last year was $7.05 per gram, which would make that particular portion of the harvest worth $2820!

I put two buds, weight 1.4 grams in a 1.5 inch diameter mesh ball infuser, and let soak in a liter of room temperature deionized water for 24 hours. There was minimal color or taste. I drank 100 ml one day, 200 ml another day, and 300 ml two other days. Back and sleep showed signs of improvement.

I then put 1.5 grams of cannabis powder in the infuser and let soak at room temperature in a liter of water for 24 hours. This tea had more color and flavor. It also had some fines in it that had soaked through the mesh of the infuser. I assumed it was more potent than the first batch of cold brew tea, so I consumed less, in the range of 40 to 70 ml. There was at

least one day when 70 ml felt like it was too much. Note that a standard tea bag contains approximately 1.5 grams, so using one tea bag in a liter of water and then drinking 50 ml per day would be the equivalent of making one tea bag last for 20 days!

SMELL

Cannabis puts off a distinctive odor, at least according to the newspaper articles I read. Does this smell have any health effects? Should we keep a cannabis plant in our living room for a sort of aroma therapy? I believe I received a boost in my general sense of well-being on the days I processed cannabis plants for fermentation, and was smelling the cut leaves. I may be quite mistaken, but this is a concept that we should be aware of. Who knows, at some point in the future it might be considered normal to have a cannabis plant in the house for health reasons that do not involve smoke or getting high.

OTHER FOOD PREPARATIONS

I think it is standard wisdom that heat is required to convert THCa to THC, and CBDa to CBD. It is quite possible that chemicals produced by heat are useful for treating many disorders, so any complete testing of cannabis as superfood should include some heated versions. One needs to be even more cautious about quantities consumed since the result may be getting high or some other form of impairment.

Temperature of the tea brew is an interesting parameter. What is the effectiveness of tea brewed at 50^oC versus 75^oC versus boiling? Length of time of brew might change chemistry. The type of water (deionized versus distilled versus tap) might affect results. And of course we need to compare tea made from male plants against tea from female plants.

One other form I might try is the making of cannabutter. One takes a sauce pan and melts butter (not margarine) in it, adds a little water, and then a quantity of dried leaves or buds, and simmers. The important chemicals leach out of the cannabis and into the butter. Usually one will pour the batch through a cloth to strain out the leaves, and let the solution cool in another container. As it cools the butter will solidify on top the water. The butter can be broken up and removed and the water discarded. I would try eating the butter on a bread, butter, and jam sandwich. It could also be used in baked goods. I would probably try eating it both strained and unstrained. Again there are many variables to consider.

I have had one experience with cannabutter. A friend gave me some (a few cubic centimeters). I ate an amount perhaps the size of a pea, spread thinly on a cracker about bedtime. I was *extremely* dizzy all night long, making it difficult to get to the bathroom. I would start with no more than a few grams of powder per pound of butter.

STEROID USE – ACUTE VERSUS CHRONIC

I have no medical training, but do have some experience in observing the effects of prednisolone, a corticosteroid used as an anti-inflammatory in the treatment of arthritis, asthma, etc. My father-in-law had severe asthma his whole life and was a heavy user of this drug. He used it every day, treating asthma as a chronic condition. My wife and daughter have milder cases, usually managed by other drugs. Occasionally, however, there will be a flareup, an asthma attack, that calls for treatment as an acute case. The standard treatment, as I recall, was 25 mg day 1, 20 mg day 2, 15 mg day 3, 10 mg day 4, and 5 mg day 5. The asthma was usually well controlled within a few hours after the first dose.

Prednisolone is manufactured in at least four different dosages: 5, 10, 20, and 40 mg per tablet. Prescribed amounts range from 5 to 60 mg per day.

Several years ago I developed a severe pain in my shoulder (arthritis?, bursitis?, tendonitis?). Given my low tolerance to most medications, the systematic failure of medical doctors to believe me, and the negative effects of the WiFi in the typical doctor's office, I decided to try prednisolone ordered from Canada (the package actually came from Calcutta or Moscow). The shoulder pain disappeared after a few months, and stayed away with a maintenance dose of 5 mg.

Then about two years ago I developed significant lower back pain. A dosage of 10 mg kept it within tolerable limits, but still quite noticeable. I tried reducing dosage a few times, but the pain was unacceptable.

Then I started testing cannabis. The back pain soon decreased. I dropped to 5 mg, then 2.5 mg, then the occasional period of none at all. It would appear that unheated cannabis has anti-inflammatory properties, at least for my body. This is all very preliminary, but there are hints that cannabis may not have a constant dosage for a chronic condition. It may require a variable dosage like for an acute condition. Instead of 5 seeds a day, I may need a dosage more like 15 seeds one day, 10 seeds the next, and so on. That is we start with a therapeutic dose to deal with acute symptoms and reduce dosage quickly to the amount appropriate for chronic symptoms.

CONCLUSIONS

My testing of cannabis as a superfood has been very random thus far. The number of variables is large. Proper testing could take hundreds of people and years of time.

One thing is certain: my steroid consumption is reduced. Back pain and sleep are still not perfect, but I believe are better than before cannabis testing started.

A result that I did not expect is an improvement in my EHS. It is difficult to be absolutely certain of this since my EHS normally ebbs and flows. At the worse, my chest will start to tighten after 30 minutes in the same room with a cell phone that is on, but not in use. That has not happened since testing began.

I religiously avoid hot spots that have made me ill in the past (library, pharmacy, down-

town church, Chili's Restaurant (ill for two weeks!), any place with WiFi). My wife recently had surgery for a broken elbow, forcing me to spend time in the hospital and in a *very* long line at the pharmacy. Normally I would have been ill for days. This time I felt some mild discomfort early morning of the following day, then back to normal. I consider that a *substantial* improvement!

It appears that at least a portion of my EHS is due to a nutritional deficiency, some chemical found in cannabis. It also appears that once an adequate amount of the chemical has been consumed, that a daily maintenance dose is not necessary. At the moment, I would guess once a week might work. It might be that a proper dose has tolerable side effects that wear off in a few hours but then has benefits that last for days or weeks.

Each of us is unique, such that even if cannabis helps my EHS, it might not help anyone else. Or it might have some benefit to only a few percent of the EHS population. However, if someone is able to grow a few plants legally at a modest cost, I think it is worth a try. Just remember that cannabis is a potent medicine. Start testing with *small* amounts.