CANNABIS AND HEMP association

(THC) Delta9-tetrahydrocannabinol:

- Most prominent compound found in the cannabis plant found in the 1960's.
- THC binds to the CB1 and CB2 receptors causing a change in the function of the cell it is binding.
- It turns off vomiting, triggers appetite, 20x stronger then aspirin, an anti-oxidant, decreased tumor cells, PTSD, Tourette's syndrome.
- There are no receptors in the brain stem, this is why no one has ever been in medical danger from cannabis. If the THC does not bind in that area it cannot cause an effect.

(THCA) Tetrahydrocannabinolic acid:

- There is very little THC in plants it is mostly THCA, THCA is an acidic cannabinoid that is not psychoactive, the heat is what turns the THCA into THC.
- THCA has its own medicinal properties, it is anti-inflammatory and it modulates the immune system. It can suppress it or enhance it. THCA can be tested in a lab and this allows for the patient to know the full amount of THC in the plant.
- THCA has a very different properties physiologically and psychologically then THC does. If you were to have a lab test a strain you would see the THCA % as substantially higher then THC % and you would add the two together to get the total THC % for the medicine you are working with.

(THVC) Tetrahydrocannabivarin:

- At low doses it blocks the CB1 receptor, in high doses it binds to the receptor.
- It has anti-convulsive properties, it lowers the seize threshold. When it blocks the CB1 receptor it has been known to cause weight loss, decreased bodyfat and increased energy expenditure in rats.
- This is a psychedelic high found in a lot of African man raised plants.

(CBD) cannabidiol:

- Second most prominent compound in the cannabis plant.
- Very strong anti-inflammatory properties, it has medical preventative properties, preventing the body from making the chemical that causes inflammation.
- CBD is anti-psychoactive, they actually have a study in which subjects were given an overdose of THC, then CBD as an anti-dote to the psychoactive chemicals. It doesn't reverse the high, it has it's own properties that cause a change in the subject. For example CBD caused the subject to be less high without lowering the THC levels in the subject.
- CBD has proven to effective for certain types of cancer as well. CBD has been known to cause cancer cells to "commit suicide". CBD at low doses will energize and keep you awake, at higher doses it will put you to sleep.
- A few short years ago there were virtually no high-CBD plants, most strains were bred to 10-20% THC with CBD at 1-2% where now we are seeing plants 8-15% CBD and 5-6% THC, it can be a 50-50% ratio. The testing process is essential in reversing the trends and breeding CBD back into the plant.
- A number of studies look at CBD as a neuroprotective, CBD protects the nerves inhibiting the process which nerves are damaged and protects the brain against injury when people have sustained a brain injury.

(CBN) Cannabinol:

- It results from a breakdown of THC. It's not naturally synthesized from the plant, it occurs during the breakdown of the plant and gives the sedative feeling you get from cannabis.
- This is a psychoactive property. Older cannabis that's been sitting around is known to have high levels of CBN, CBN is known to make you sleepy.
- It works as an anti-inflammatory, anti-convulsant, anti-bacterial, stimulates bone cells (osteocites) it inhibits skin cell formation. This may lead to a treatment for skin disorders once we further understand the compound.
- THCA breaks down into THC which breaks down into CBN with heat or over time. CBN can be tested and usually it is under 1% and it is important to know this % due to its sedation properties.

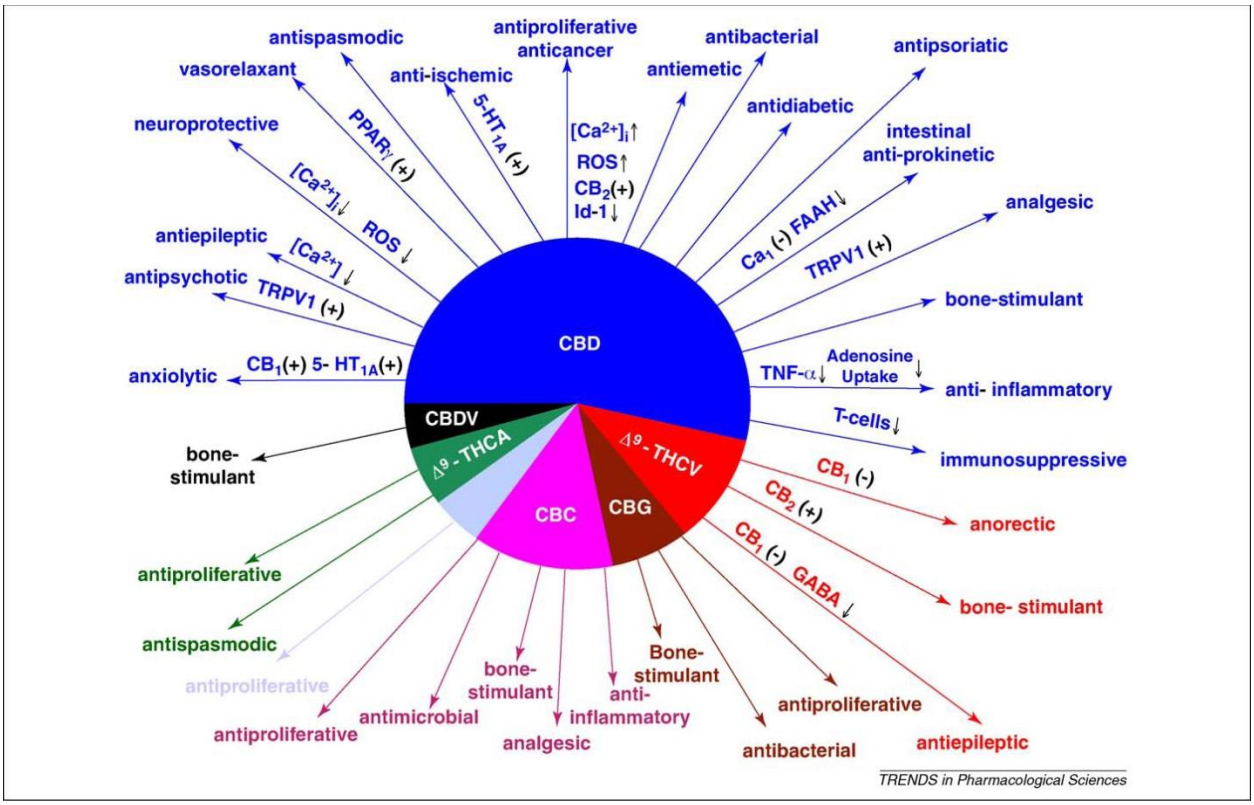
(CBG) Cannabigerol:

- A pre-cursor to CBD and THC that acts as a stem cell which forms other cannabinoids. Found in small amounts because as soon as it is formed it creates other cannabinoids.
- It is a very strong anti-inflammatory which inhibits gaba which gives anti-anxiety and anti-depressant properties. It can work in conjunction with the other cannabinoids to get the best effect due to its small amount found in the plant.
- Our body's enzymes work with CBG and form it into the next molecule, the enzymes determine what is formed next. By altering the plants enzymes through breeding or genetic manipulation we can potentially the CBD and THC ratios in the plant.

(CBC) Cannabichromene:

- This is a compound synthesized from CBG, less common then THC and CBD.
- It has anti-inflammatory, analgesic, anti-fungal, and anti-bacterial effect. Has been found to kill tumor cells in rats. It also appears to inhibit the uptake of Anandamide, it has anti depressant properties.
- This is not a cannabinoid that patients look for like THC/CBD/CBN but we do know that this cannabinoid warrants more study.

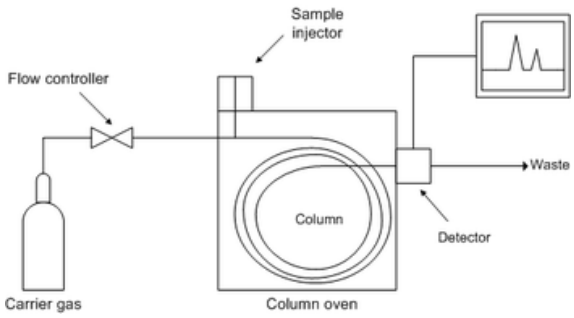
Before testing was available breeders would specifically look for the highest quality THC strains, now thanks to the test labs breeders are looking for high CBD strains more frequently breeding CBD back into the plant.



Two different scientifically valid cannabinoid testing methods:

(HPLC) High Performance Liquid Chromatigraph-The plant is measured with the acidic cannabinoids which allows researchers to determine the ratio between THCA and THC. This is important for judging the quality of the cannabis and understanding what effect it might have the patient. For edibles and non-inhaled product it is much more important because THCA has much different properties physically and psychologically, it's very important to know those numbers for the non-inhaled products. Keeps the cannabinoids in their natural state it is much more realistic than GC.

(GC) Gas Chromotagraphy-Requires heating up in the lab and measures it at the boiling point, THCA ends up being decarboxylated in the lab. The acidic cannabinoids are sensitive to heat.



Inside a GC oven

Montana BioTech

Re-Discovering the Science Behind Cannabis

Medical Cannabis Testing Results

Client Information

For	Misty, KannaKare	MMJ Card I.D.	
Address	Bozeman	Phone	
		Email	

Sample Information

From	Kief	Test preformed	Botanical Diagnostic Analysis
Strain	Silvertip	Notes	
Test Date	10-20-2011	Test end date	10-21-2011

Cannabinoid Profile (%/volume): (%/D.W.)			(Present/Absent)			Calculated (%/500mg D.W.):	
CBD	≤0.7%	Bio-Active	CBC	Bio-Active	Present	CBD 3.4mg	≤0.7%
CBN	≤1.3%	Bio-Active	CBG	Bio-Active	Present	CBN 6.45mg	≤1.3%
THC	≤64.7%	Bio-Active	THCV	Bio-Active	Present	THC 323.5mg	≤64.7%**
THCA	≤66.2%	Non-Active	Cannabinoid Acids Present, Low***				
					Total Potential THC		**≤66.3%***

Relative Ratio of Cannabinoids (TAC):				% of TAC:	
CBD:	CBN:	THC:	Others:	CBD	≤1%
0.01:1	0.019:1	32.6:1	0.02:1	CBN	≤1.9%
3.4mg/330mg	6.5mg/326.9mg	323.5mg/9.9mg	7.1mg/340.5mg	THC	≤95%
				Others	≤2.1%
Total Assayable Cannabinoids (TAC)				**Total 100%**	

*** Total Potential THC,** if all THCA is converted to THC. Therefore, the **Total Potential THC** is the sum of present THCA with the present THC in the submitted samples before decarboxylation analysis.

**** THC,** levels as tested under lab conditions, optimal THCA decarboxylation.

***** Cannabinoid Acids,** Relative levels of acids present after Lab optimized decarboxylation analysis.

Bio-Active: Decarboxylated cannabinoids readily available for biological activity, will bind to endo-cannabinoid receptors.

Non-Active: Non-Decarboylated, not available for biological activity, will NOT bind to endo-cannabinoid receptors.

Thank you for choosing **Montana BioTech** for your analytical needs. This report outlines the results of your products analysis. If you have any further questions regarding your product, feel free to contact us for a consultation.

Joseph Lacerenza, Montana BioTech

Phone: (406) 600-6871 Email: MontanaBioTech@gmail.com