alpha-CAT®

Cannabinoid Analysis Test

Laboratory Protocol
Manual

Table of contents :

WARNING :

1. Do not inhale , drink or ingest any of the kit components.
2. Do not leave any chemicals unattended.
3. Always wear nitrile gloves when handling chemicals.
4. Only perform tests in a very well-ventilated area, or under a carbon filter fume hood.
5. Prepare some paper towels to use as an absorbent in case of spill.
6. If the test fluids are spilled put some paper towel on thespill and immediately leave the room and allow the room to ventilate until there is no detectable odor. Use nitrile gloves during the cleanup.
7. Store coloring dye in the fridge at 5 °Celsius
8. Store the test fluids in a cool dark place. Light and heat cause the fluids to degrade much quicker. If left in a heated area and the test fluids may be destroyed, and will need to be disposed of properly.
9. Keep the test plates in a dry environment away from moisture at room temperature

IMPORTANT INFORMATION FOR SAFETY :

This kit contains 2 chemicals that require specific handling. When handling chemicals, always wear a set of nitrile gloves. It is also recommend that protective eye wear, and face masks are used wheneverhandling chemicals. These chemicals have a limited shelf life. Please utilize this chemicals within a year from your purchase date.

Recommendations
Only use the Alpha- -Cannabinoid Analysis Test (CAT) in a very well-ventilated area, or under a fume hood with carbon filter if available. Do not inhale, drink or ingest any of the kit components. Keep all kit components away from children and animals. Cannabinoid Test fluids are prone to evaporate quickly, close the bottles immediately after use. The coloring dye is sensitive to light and prone oxidation. Always store coloring in the refrigerator at 5° Celsius.

Spills
If the test fluids are spilled, immediately put paper towels on the spill and immediately leave the room. Allow the room to ventilate. Do not enter again until the odor has dissipated. In case of chemical spills use nitrile gloves and paper towels during the clean up procedure.

Chemical disposal
To dispose of any unused or used chemicals and materials that have been contaminated by any of the chemicals contained in the kit, follow the appropriate procedures in respect to the environment bring all your trashes to your local Garbage Deposit sorts.

PLEASE READ THROUGH THIS ENTIRE MANUAL BEFORE PROCEEDING WITH YOUR FIRST TEST

Introduction to Alpha-CAT
The Alpha-CAT (Cannabinoid Analysis Test) is part of an international collaborative effort to provide scientific support for all participants in the medical cannabis community.

Our mission
The Alpha-CAT is committed to the advancement and normalization of medical cannabis to create standardized dosage option for patients and educating user about the natural ingredients called cannabinoids.

Our method
The Alpha-CAT was developed utilizes High Performance Thin Layer Chromatography for the purpose of analyzing the cannabinoids present in cannabis samples. It has been scientifically validated by the University of Leiden in the Netherlands in accordance with ICH guidelines to provide fast and accurate results. The Alpha-CAT tests quantitave percentages (within ± 0,5%) of CBD, CBN, THC, THCV, CBG and CBC. It also analyzes acidic counter parts such as THCA and CBDA which provide insight into sample age and quality of cure. It utilizes only a 100mg to provide results in less than 45 minutes and supports high through put so that multiple strains may be analyzed simultaneously. It is mobile, you can take it anywhere and test flowers, flowers, butter, oils, hash, kif and other concentrates for the information necessary to accurately dose and label your products.

Our Goal
To provide the means for exploration and cataloging of cannabinoid profiles and their relations to our physical and mental well for the benefits of patients, doctors and growers.

TEST TO KNOW WHAT IS IN YOUR MEDICINE !

Alpha-CAT Components

REGULAR KIT content

- Kit Contents
- Manual protocol
- THC calibration chart, standards that allow accurate % quantification
- 10 Test plates
- 10 Dye powder microtubes (0,3 gr), to be kept in a cool dry and dark place
- 2 Bottles of alpha-CAT test fluids (60 ml)
- 40 Eppendorf tubes (1,5 ml)
- 1 Developing jar
- Dipping tray
- Pipettes (3 ml)
- Syringe (1 ml)
- 1 Vial with 50 capillary tubes (1 µl)
- 20 Nitrile gloves
- 40 weighting papers
- 1 Becher (25 ml)
- 1 capillary pipette bulb

MINI KIT content

- 1 THC calibration chart, standards that allow accurate % quantification
- 2 Test plates
- 2 Dye powder microtubes (0,06 gr), to be kept in a cool dry and dark place
- 1 Flask of alpha-CAT test fluid (10 ml)
- 8 Eppendorf tubes (1,5 ml)
- 1 Developing jar
- 1 Dipping tray
- 1 Pipettes (3 ml)
- 1 Syringe (1 ml)
- 1 Vial with 10 capillary tubes (1 ul)
- 4 Nitrile gloves
- 8 weighting papers
- 1 Becher (25 ml)
- 1 capillary pipette bulb

Included in the Alpha-Cat, Pharma Chemotype chart and cannabinoid measuring tool. These tools will enable you to easily determine the cannabinoid percentages as well as the cannabinoid combinations , which in turn correspond to different pharmacological effects. (refer the cannabinoid information page to learn more about cannabinoids.)

DEFINITIONS

■ **Cannabinoids :**
The pharmacological active compounds present in Cannabis. (e.g. THC, CBD, CBN, THCV, CBG, CBC)

■ **Cannabis :**
plant producing cannabinoids in leaves and flower clusters

■ **Cannabinoid matrix :**
any materials containing cannabinoids

■ **Cold print :**
The spots of origin are not heated; a natural fingerprint will be the result after developing the plate. The acids and the neutral cannabinoids will be revealed. It measures the freshness of the sample.

■ **Haschich :**
A cannabis product made from cured trichomes of cannabis flowers.

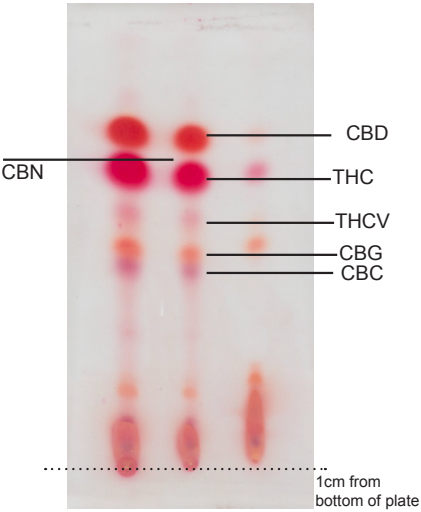
■ **Hemp :**
Cannabis strain cultivated for fiber with minimal levels of THC. A non-drug type of Cannabis

■ **Hot print :**
Prior to developing the plates, the spots on the plate are heated for 40 seconds (with heating device) in order to transform the cannabinoid acids into their neutral states.

■ **Origin :**
Extraction fluid application spot. The place on the TLC plate where 1 or 2 µl of extraction fluid will be applied by a capillary tube.

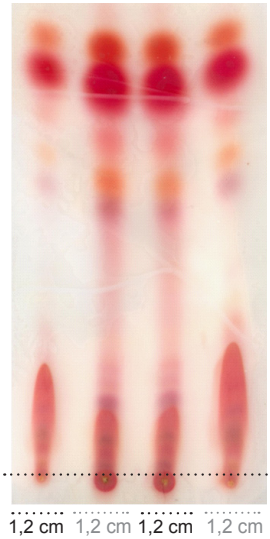
■ **Trichome :**
Fine structured outgrowth on Cannabis. Cannabis (stalked glandular) trichomes contain a resin excreting headcell: a crystal like bulge will be formed during flowering, trichomes produce the cannabinoids.

TEST INFORMATION



CHEMOTYPE PROFILING

LANE 1	LANE 2	LANE 3
Origin position A	Origin position B	Origin position C
2* µl hot print	1* µl hot print	1 µl cold print
CBD, CBN, THC, THCV, CBG, CBC % Calibrated cannabinoid measuring tools are used on this lane.	HALF LANE Cannabinoid profile (CBD, CBN, THC, THCV, CBG, CBC)	Natural Profile : Cannabinoids are revealed in their acidic natural state



POTENCY TESTING

LANE 1	LANE 2	LANE 3	LANE 4
Origin position A	Origin position B	Origin position C	Origin position D
Sample 1	Sample 2	Sample 3	Sample 4
2 µl hot print	2 µl hot print	2 µl hot print	2 µl hot print
CBD, CBN, THC, THCV, CBG, CBC% Calibrated cannabinoid measuring tools are used on this lane.	CBD, CBN, THC, THCV, CBG, CBC% Calibrated cannabinoid measuring tools are used on this lane.	CBD, CBN, THC, THCV, CBG, CBC% Calibrated cannabinoid measuring tools are used on this lane.	CBD, CBN, THC, THCV, CBG, CBC% Calibrated cannabinoid measuring tools are used on this lane.

* Extra capillary tube of 1 µl or 2 µl can be purchase online at www.alpha-cat.org

PREPARATION FOR TESTING:

Before proceeding with testing, make sure to identify all the test components and prepare them for their appropriate use in the process. Only perform this test in a well-ventilated area or under a charcoal filtered fume hood. Always wear nitrile gloves when handling chemicals.

1. Make sure all the measuring utensils, pipettes and test tubes are easy to reach

2. Make sure all the chemicals are within reach.

3. Lay out the number of test plates that are needed. Up to four tests can be perform simultaneously once the operator is skilled in the test procedure. Do not touch the test plates with bare hands, use gloves.

4. Set out the developing jar(s). One developing jar. One developing jar is needed for each test plate used.

5. Set out the scale and a timer

6. Read through the test procedure as many times as necessary to become comfortable with the procedure and methods before performing the first test.

The following should be supplied by the user:

- All cannabinoids matrix samples
- A well ventilated working area (ideally using a carbon-filtered fume hood)

Timer

- Scale weighting from 0,001g to 0,01g
- Scanner set for 600 ppi to capture test plate image
- Paper towels
- Heating device*(oven)

* Alpha-Cat heating device and alignement tool can be purchase directly at www.alpha-cat.org

IMPORTANT : Test plate image fade with time and is faster under light. Scan of the plate should be taken as soon as the plate is dry after coloration.

STEP BY STEP PROTOCOL

Section A : Extraction

Step 1

■ Put on the nitrile gloves provided in the kit before handling anything.

■ Weigh 100 mg dried Cannabis using a weighting paper prodived. Scramble it and Carefully put the dry weighted sample into a clean extraction tube (eppendorf).

Step 2

■ Add 1ml Test Fluid in to the eppendorf tube, using the 1 ml syringe.

■ Close the lid of the extraction tube and shake vigorously for 10 seconds.
■ Immediately close the extraction fluid container, it evaprotas very quickly.

Step 3

■ Wait for 2 minuts for the extraction process to finalize.
■ Make sure all testing materials (herb, resin,…) is covered by the extraction fluid, one might push the flower down with a clean stick (do not add more than 1 ml !)
■ Shake extraction tube once more before taking sample.

Section B

Template Layout

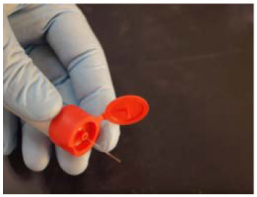
Step 4

■ The test plate should be laid out with the coated side facing up, be careful not to touch the white front of the plate. The 5cm edges should be the bottom and the top edges, while the 10cm edges are the sides.

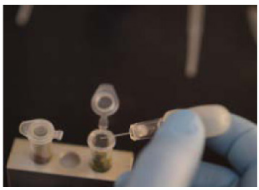
■ Place the plate, coated side up, on the upper white surface make sure that the samples applied onto the TLC plate are 0,5cm away from the sides and 1cm from the bottom where the sample will be applied to A, B and C. (see page, Test Information)

Loading hot print

Step 5



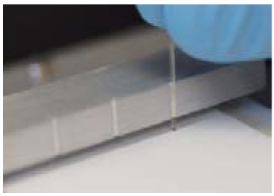
■ Take out a capillary tube which may be used the holder provided (pipette bulb); or it may be used by holding the capillary tube between your thumb and finger (be sure not to let the glove block the open end of the capillary tube in your hand or it will not draw the fluid up properly).



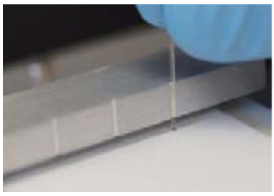
■ Carefully open the extraction tube

■ Make sure the test plate is lined up and in position, pushed in to the corner.

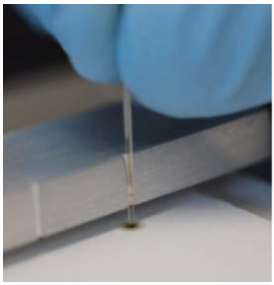
Step 5 Step 5 Step 5



■ Use one capillary tube to take a sample by dipping one end of the capillary tube into the sample fluid. The capillary tube will automatically take up 1 µl of the extraction fluid. The extraction fluid can be seen as it is taken up into the capillary tube. It is important to watch and make sure that the capillary tube is full before applying the sample fluid to test plate. Accurate measurement is very important. If the capillary tube becomes clogged by small amount of plant material, discard it and use a fresh capillary tube to apply the properly measured sample.

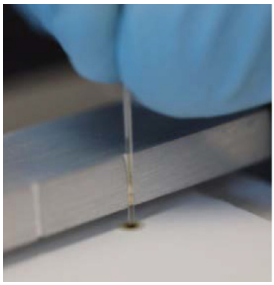


■ While holding the capillary tube , place it in the positopm A (far right) until the lower end of the capillary tube touched the coated white surface of the plate.



■ When the end of the capillary tube touched the plate, the sample fluid will be absorbed by the plate. This should only take a few seconds. Once all the sample fluid is on the plate, remove the capillary tube and discard it.

■ Position A requires 2 µl, so this process must be performed twice on position A because each capillary tube holds 1 µl.



■ Use a new capillary tube to place 1 µl on position B, which is the origin of lane 1

■ Close the eppendorf tube and place it back in its holder

■ Alllow the samples to dry 30 seconds

Section C : Heating

Loading hot lane

With an **Oven**

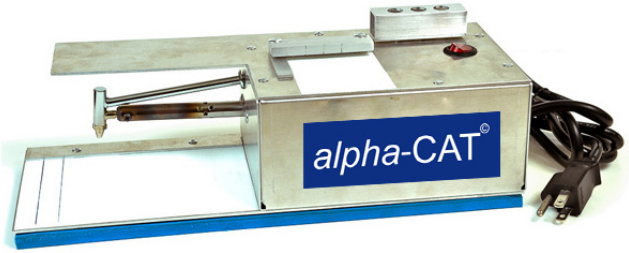
Step 6

■ Set the oven at 100°Celsius, let it warm up for 5 minutes
■ Set the timer for 40 seconds
■ Then place the plate on the glass side with white coated facing up in the oven, leave the plate for 40 seconds
■ Remove the plate, the plate is HOT so Be careful when handling !
■ Let it cool for 20 seconds
■ Using a new capillary tube, apply a 1µl sample spot to position C, the origin of Lane 3 . Do not heat this sample spot !

With the **Heating and Alignment tool***

Step 6

■ Place the plate on the lower white surface, coated face up, away from the air flow.
■ Set the timer for 40 seconds
■ And slide the top of the plate along the top guideline until the left side of the plate lines up with the left guideline. Heat for 40 seconds.
■ As soon as the timer reaches 40 seconds, slide the plate to the right until the left edge of the plate lines up with th next guideline. Heat for 40 seconds then remove.
■ Place the plate on the white surface and slide it back into position in the alignment tool.
■ Using a new capillary tube, apply a 1µl sample spot to position C, the origin of Lane 3 . Do not heat this sample spot !
■ Let the spot dry as preparation of the developing stage begins.



* For official alpha-cat laboratory tester, for information please contact us info@alpha-cat.com

Section D : Developing

Step 7

■ Use the 3 ml pipette to add 2ml of Test Flui into the glass development container. Immediately close the Test Fluid bottle after using it. It evaporates very quickly.

■ Repeat this procedure for each development container in use.

■ Do not leave the top off the development container for long. Screw the lid on immediately after inserting the test plate. Be very careful not to move the developing container at all while the plate is developing.

Step 8

■ Place the test plate into the development container, it will lean at a slight angle with a coated side face up, and the edge with the samples toward the developing fluid . Make sure the bottom corners of the test plate are touching the side of the container. If the bottom of the test plate is not touching the side of the container, the developing solution may not be absorbed correctly. Put the lid on the developing container.

Step 9

■ Allow the test to soak up the developing fluid until it reaches the top of the plate (approx. 25 min.). Do not let the test plate remain in the developing chamber after the developing fluid has reached the top of the plate or the results may blur.

Step 10

■ Take the test plate out of the development container and allow the test plate to dry for approximately 3 minutes in a ventilated area. It is important that the plate be as vertical as possible while drying. It is recommended to stand the plate on an absorbent such as paper towel, and lean it against something stable.

■ While the plate is drying, prepare the coloring dye for the revealing phase of the test.

■ Once the plate is dry move to the revealing steps 11.

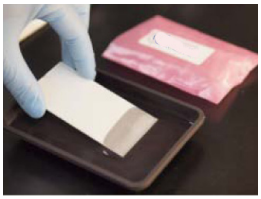
Section E : Revealing

Step 11

■ Make sure to always wear gloves when handling chemicals. Wear the nitrile gloves provided, for this entire coloring dye process including the dipping process. Do not have direct contact with the coloring dye, the coloring dye will temporarily color your skin red in small sopt if your skin comes in contact with ant granules of powder, Always take necessary precautions to be safe when handling chemicals.

Step 11 Step 11

■ Set up a drying area for the test plates. Use several paper towels to create a drying area by leaning against something. It is recommended to do this on something disposable, such as cardboard, so that it will absorb any remaining coloring solution. The test plates will be set up to dry leaning against one side of the towel paper , with the coated side facing out, as seen in photo to the left.



■ Gently empty the contents of one dye microtube into dipping tray to be rinse with water to pour the the powder stick to the microtube. Add water by with the 25 ml becher full.

■ Gently move the dipping tray back and forth to help dissolve the dye, After allowing 15 seconds for the dye to mix, prepare the test plate for dipping. Proceed with dipping the test plate into the dipping tray, coated side down, by gently setting the test plate into the coloring solution in the tray. **Allow it to remain in the tray for 1 second only !**

■ Lean the plate (origin side down, coated side out) against the paper towel you have set up as drying area. Let the test plate dry for 7 minutes.

■ Lay the test plate down on a flat bed scanner for a quick scan and loading to database* or send it to info@alpha-cat.org. The colors on the plate will fade over time. The plate will turn reddish as it is exposed to light and air over a short period of time. Do the reading of the dots and scanning between 4 and 8 minutes after the test plates are coming out of the developing chamber.

*only included with Alpha-CAT mobile Laboratory

CALCULATION FOR MULTIPLICATION FACTOR

Multiplication factor = (100 mg X 2 µl) / (samples weight (mg) X extraction fluid (µl))

Concentrated samples (high THC concentration)
In a case of a concentrate samples where *you expect between 60 % and 100%* THC you will take *40mg* of samples with 1 µl extraction fluid with the suitable capillary tube, then:
The multiplication factor will be:
(100 x 2) / (40 x 1) = 5 x (multiplication factor)
Then after spot calibration of the plate, Then if you chart shows 13 % THC multiply by 5 you will actually have 65% THC in your sample.

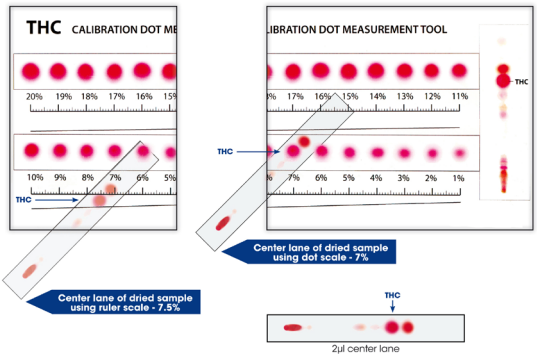
Diluted samples (Low THC concentration)*
In a case of a concentrate samples where *you expect between 0,2 % and 5%* THC you will take *200mg* of samples with 8 µl extraction fluid with the suitable capillary tube, then:
The multiplication factor will be:
(100 x 2) / (200 x 8) =0, 125 x (multiplication factor)
Then after spot calibration of the plate, if you chart shows 5 % THC multiply by 0, 125 you will actually have 0, 63% THC in your sample.

* For hemp, needed capillary tube of 2µl or 4µl concentration, to order it please contact us at info@alpha-cat.org

Reference Charts

How to use Alpha-CAT's cannabinoid measurement scale

The measurement scale/tool is printed on clear plastic and has two ways to measure the size of all Cannabinoid dots.



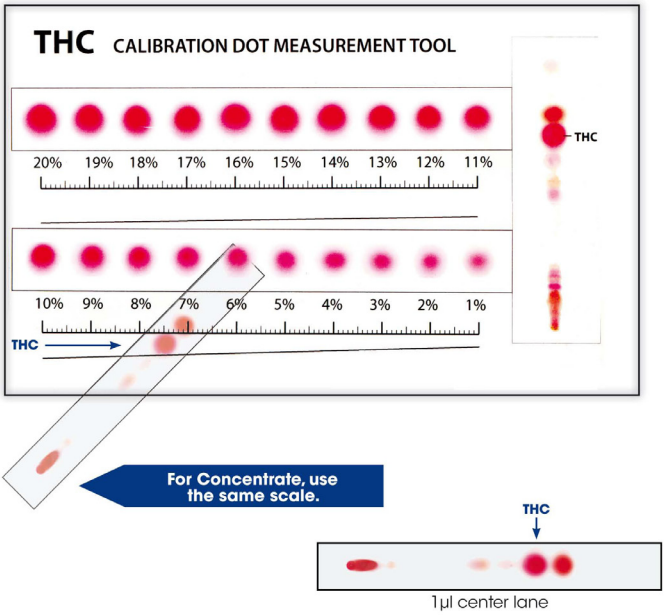
There are two rows of dots that gradually get larger from right to left :
The bottom row dots (from 1% to 10%); the top row of dots (from 11% to 20%).
Underneath these dots you see a line with percentage marks on it. This line runs parallel with the size of the dots and works together with the sloped line underneath which runs closer at the 1% dot and slowly moves further apart as the dots get larger.

How to use the dots once your plate is dry [3-5 minutes] :
The dots are used to lay over the dot scale you want to measure, the goal is to find the dot that is most similar to the dot on your test plate. Try a couple till you see the subtle difference of a good fit. The example shows 7%.

How to use the ruler:
The ruler works by using the percentage line and the sloped line below the percentage rule. Lay the ruler over dot you want to measure—the dot should fit snug between the two lines. Move the rule until the dot fits snug, the place where the dot fits snug is the % reading above the rule. The scale can be used to work beyond a whole number, like 7.5% in this sample.

How to measure Concentrates with Alpha-CAT's cannabinoid measurement scale

The measurement scale/tool is printed on **clear** plastic and has two ways to measure the size of **all Cannabinoid** dots.



How to measure & calculate concentrates
with Alpha-CAT 's THC calibration dot measurement tool

When measuring concentrates we recommend you weigh your sample to a twentieth of a gram and then multiply your results times two.

For example, if the numbers of a normal sample read 0.10 grams on your scale, for concentrates we are looking for 0.05 grams. One could divide further for 0.025 grams and then multiply in this case the reading by 4 to get to the correct percentage.
When dividing down to a fourth of a sample make sure a well-balanced scale that reads to 0.000 (hundredths).

A second way to measure is to weigh the concentrate sample at 0.05 grams and to use a 1 µl straw, and are multiply the results by 4.

How to measure the cannabinoid acid

By doing a chemotype profiling, calculate the difference between the neutral cannabinoids measure in LANE 2 (1ul HOT) and LANE 3 (1ul COLD).
For example
if you obtain 16 % THC on LANE 2 and 5 % THC on LANE 3, then THCA = 16% - 5% = 11%.

Chemotype information

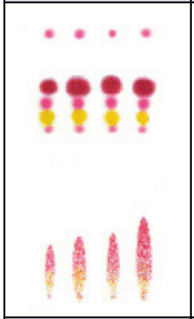
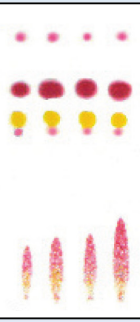
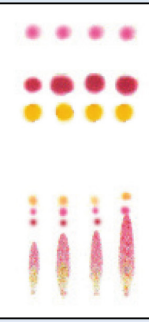
Use the chemotype reference chart provided by Alpha-CAT on page 15 to determine the chemotype of the sample, if the sample doesn't match any one of the chemotypes exactly, it is either a new chemotype, or part of a subtype. If it contains the same cannabinoids as a certain chemotype, but with different ratios, then the sample is a subtype of that particular chemotype. Currently there is a project underway to build a much larger database, which will allow for the accurate and correct categorization of all known cannabis types. The chemotype chart will grow as new chemotypes are discovered and categorized. The chemotypes have been categorized based on cannabinoid content. Different combinations of cannabinoids form different chemotypes. Different ratios of cannabinoids within a particular chemotype make up the subtypes within each chemotype.

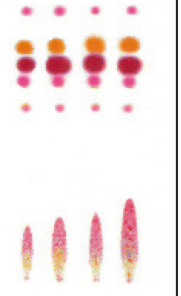
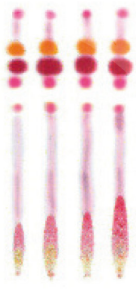
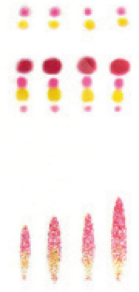
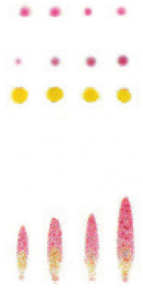
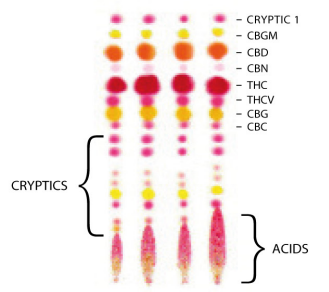
For ant technical questions, contact : info@alpha-cat.org

alpha-CAT®

Cannabinoid Analysis Test

CHEMOTYPES AND CANNABINOID PROFILE

Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
							
Mexican Haze type	CBC - Haze type	Indian type	Kenyan type	Thai type	CBC - Thai type	Skunk type	Haze type

Type 9	Type 10	Type 11	Type 12	Type 13	Type 14	Specimen
						
Hashplant African type	Hash type	Skunk Hashish type	Ruderalis type	Hemp CBD type	Hemp CBG type	Full cannabinoid fingerprint

alpha-CAT

CHEMOTYPES AND CANNABINOID PROFILE EFFECT RELATIONSHIPS FOR CANNABIS SPECIES

	WAX	CBD	THC	THCV	CBG	CBC	EFFECTS & CHARACTERISTICS 1) START- MIDDLE STAGE 2) FINALLY
Type 1 Mexican Haze type	●		●	●	●	●	1) High, fast & powerfull by THCV. Langlasting and strong feeling of intoxication, due to CBG. 2) Stoned yet High. Activating, Energizing. If high in CBG And or CBND: Sleepy/ Sedative. Slowed down feeling
Type 2 CBC - Haze type	●		●		●	●	1) High-stoned. 2) Body buzz; sleepy/drowsy. Sedative due to CBG/CBC. Slowed down feeling. Stoned.
Type 3 Indian type	●		●	●	●		1) High, fast & powerful by THCV. Lang lasting and strong feeling of intoxication, due to CBD. No CBC! 2) High-/sedative. stoned (CBG)
Type 4 Kenian type	●		●	●			1) High, fast & powerful strong high-feeling. 2) High-/euphoria.
Type 5 Thai type	●		●				1) High, cerebral (head-effect). Energizing. Excessively enhances all senses. 2) High, strong Euphoria, ''Up- feeling''. Physical & moral well-being.
Type 6 CBC - Thai type	●		●			●	1) High, cerebral (Head-effect). 2) High, euphoria.' CBC makes the ''high'' more intense.
Type 7 Skunk type	●		●				1) Bright ''High'' effect, strong & ''flashy'' due to THCV and CBC. 2) Activating strain (no CBG!) 3) Not stoned. Together with CBC; indica effects; ''stony-jet-high''
Type 8 Haze type	●		●		●		1) High, Active, Strong (>CBG). 2) Drowsy, stoned; ''Hazy buzz'' A Typical ''Haze experience'' when high in CBG.
Type 9 Hashplant African type	●	●	●	●		●	1) High, Activating, A Typical hashish ''experience''. Less intense then Hashish.
Type 10 Hash type	●	●	●	●	●	●	1) Physical and moral well-being. Joy, Happiness, desire for movement, Brightness, Energizing (<CBG). ''calm and tranquil ecstasy'' 2) Deep absolute sleep (>CBG + CBD). Stoned Typical ''Hashish -experience''
Type 11 Skunk Hashish type	●		●	●		●	1) Physical and moral well-being. Joy, Happiness, desire for movement, Brightness, Energizing activating .''calm and tranquil ecstasy'' 2) Activating, energizing). Typical ''Hashish -experience'' Never contains CBG!
Type 12 Ruderalis type	●		●			●	*CBGM= Cannabigerol-methylether. Ruderalis or ''Lowrider'' types contains this cannabinoid, CBGM!
Type 13 Hemp CBD type		●					1) Effect = CBD effect (Table 2)
Type 14 Hemp CBG type					●		1) Effect = CBG effect (Table 2)
Type 15 Ice water Hashish type	●		●	●	●	●	1) Effect = CBC + THC effect Leaves contains no THCV and no acidic cannabinoids

THE INDIVIDUAL CANNABINOIDS: THEIR PHYSICAL AND MENTAL EFFECTS & MEDICAL APPLICATIONS

CANNABINOID	EFFECTS, FEATURES & MEDICAL APPLICATIONS
THC **Tetrahydrocannabinol**	Responsible for the ''High''-effect (psychotropic): it uppers all sensory functions as sight, hearing, colour sensitivity and increases as no other drug the sexual arousal by men and women. Strong feeling of euphoria. It sharpens the mind. Analgesic (pain relieving), well-being, sedative relaxing. Lowering IOP, sharpens sight (anti-glaucoma). Bronchi-dilating effect (anti-asthma). The THC/THCV ratio determines the degree of appetite stimulation: THC uppers, THCV lowers appetite.
THCV **Tetrahydrocannabi-varine**	Potentiate THC strongly, and provokes heavy ''buzz-types''. Stronger and faster ''High''-effect. It makes the strain ''powerful''. Although THCV is a cannabinoid CB1 and CB2 receptor antagonist, the ''high'' comes quicker and disap-pears sooner. THC-antagonist. Lowers appetite and so food intake. Responsible for the ''flashy'' and ''quick'' effects; Euphoria and analgesic. THCV is found in very potent marijuana originated in central Africa, southeast and central Asia. Growth at high altitudes; UV-C stimulates THCV production.
CBD **Cannabidiol**	CBD works antagonistic in micromolar range; it has an opposite effect of THC. It reduces the psychoactive effect, or the ''high'' of THC, but in contrast, it will prolong slowly but increasingly this effect strongly. CBD inhibits the THC break-down in the liver, by inhibiting the so-called Cytochrome P-450-3A and 2C (subfamilies of clean-up) enzyme system. Body-effect; drowsy. Just like THC and CBN analgesic. CBD and THCV both enhance intoxication; you will ''feel it''. Responsible for the typical ''Hashish-effect''. Not psychoactive. Sedative. Strong (smooth) muscle relaxation. Reduces muscle spasm.
CBN **Cannabinol**	Mild psychoactive, sedative, analgesic. CBN is, just like aspirin, a non-narcotic type analgesic, but 3x as strong. If present, than at very low concentrations (< 0.2%). Mostly not present. CBN is a breakdown product of THC. During storage (aging) CBN will slowly increase, while the THC spot will decrease (in a non-stoichiometric manner). It will appear as a violet colored spot right under yellow CBD. Oxygen will be the most important decomposing factor. Mildly psychoactive (weak agonist for CB1 receptor). High concentrations: disorientation, stupefying effect. Relieves headache.
CBG **Cannabigerol**	Sedative, sleep inducing. Drowsiness, narcotic. Anti-microbial properties. Lowers intra-ocular pressure (IOP/ glaucoma).
CBC **Cannabichromeen**	Potentiate THC. It interacts somewhat with THC to make the ''high'' more intense and pronounced, and acts, like most other cannabinoids (same structure relationships), sedative and analgesic.
CBND **Cannabinodiol**	Probably responsible for the strong sedative/sleepy (trippy, psychoactive) effects. One of the ''cryptics''. Little bright yellow spot on the RRf position 0.42.

SUBTYPES (OR: SUB-CHEMOVARS) IN:

CHEMOTYPE 1	Subtype 1 ''Powerplant'' sativa chemovar –strong activating Subtype 2 ''White Widow'' indica chemovar- body effects, sleepy
CHEMOTYPE 8	Subtype 1 ''Haze'' (only CBC/wax, THC and CBD (high) spots) Subtype 2 ''Mexican Haze'' (+THCV) ''Haze'' (only CBC/wax, THC and CBD (high) spots), sedatief, werkt sterk antide-pressief. Subtype 2 were THCV is crossed in:,Haze blends with the trivial names; ''JackHerer'', ''Arjan''s Haze'' ''White Haze'', etc.
CHEMOTYPE 9 -10 -11	always huge amounts of CBD present in a10 to 22% range Subtype 1 ''Skunk type hashish'' with no CBG Subtype 2 miscellaneous varieties processed as ''Hashish'' + CBG Subtype 3 Ice water isolates; Whole trichrome fraction (WTF) and Crystal-Head fraction (CHF). Hashish with No CBD! (exception to the role; TF from the ''Hash-Plant'', only this variety contains CBD.

NEW RECENTLY FOUND:

CHEMOTYPE 10	''Skunk'' type hashish no CBG present
CHEMOTYPE 11	''Ruderalis type'' + CBGM
CHEMOTYPE 15	''blue berry'' -profile high THC, THCV and contains relative a huge amount of CBC.