TLConscious Organization

# TLC Substance Analysis Kit User Manual

**Version:** 2.1
**Last Modified**: September 17, 2013

# REVISION HISTORY

| Version | Date | Organization/Point of Contact | Description of Changes |
|---|---|---|---|
| 2.0 | <15/09/13> | TLConscious | Baseline Version with template |
| 2.1 | <17/09/13> | TLConscious | Edits in wording, adding of eluent mixture making to section 6, increased thank you section. |
| | | | |

# TABLE OF CONTENTS



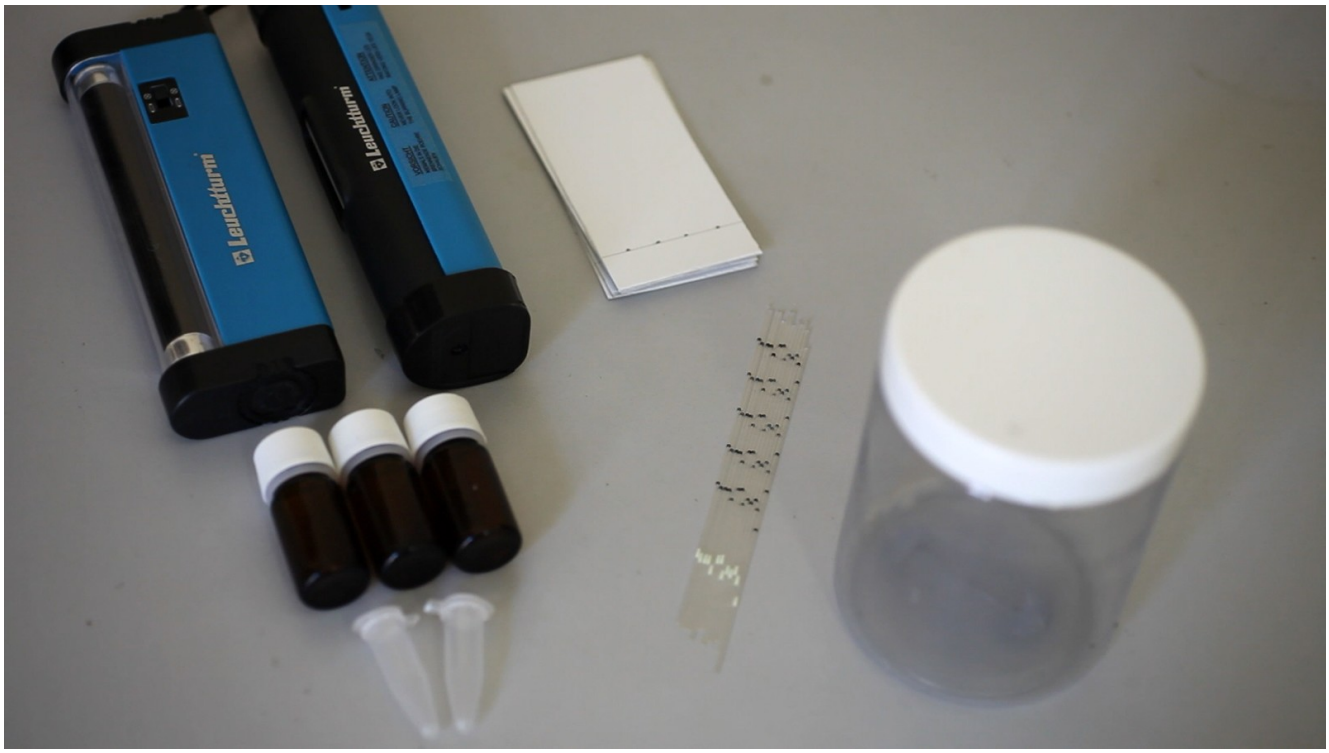
## 1. INTRODUCTION

This User Manual provides the information necessary for all users to effectively use the TLConscious Kit. The kit can be used to analyze a variety of plant and substances. The main substances for which this kit is developed at the moment are:

- Tryptamines, phenetylamines and other psychedelics (e.g DMT, mescaline, LSD, psilocybin, etc), and plants containing such substances.

- MDMA/MDA
- Amphetamine/Methamphetamine
- Opiates
- Research Chemicals (Cathinones, synthetic cannabinoids, novel substances, etc)
- Dissociatives (Ketamine, MXE, etc)
- Cannabis and related products.
- Impurities and adulterants commonly found in any of the products above.

## 2. OVERVIEW




**1: Complete TLC Kit**

The TLC kit contains:

- 2x UV lights (254 and 365nm)
- 3x Reagents (Marquis, Mecke and Ehrlich)
- 2x Eppendorf vials
- 12 plates with 4 substance columns each
- 12 microcapillaries
- Developing chamber container

- Ammonia/IPA Eluent

Must be purchased separately:

- 4xAAA batteries for UV lights
- Vinegar or vodka or ethanol or methanol for dissolving substances before loading plates
- Gloves for handling reagents

### 2.1. Cautions & Warnings

Please use safety equipment such as gloves and safety goggles and work in area with good ventilation when handling eluent mixture and reagents. Keep a glass of water with sodium bicarbonate to help quickly neutralizing any reagent spills. Do not shine 254UV light on skin or eyes. Do not ingest anything. For more safety information, below are links to MSDS file of reagents (not our own MSDS but of similar equivalent product):

- Marquis
- Mecke
- Ehrlich

Remember this kit is for analysis and educational purposes only. Identification of substances with kit is only tentative, do not consume something unless you are sure it is safe. We are not responsible for any damage that may result in the use or misuse of our kit. We do not condone the ingestion of any substance.

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## 3. GETTING STARTED

### 3.1. Setting up the developing chamber

1. First add a piece of paper towel to your developing chamber. The paper towel should be as tall as the container itself (not counting the top part where the lid is screwed to), and cover around a third to half of the container walls
2. Pour half the contents of one of the IPA/ammonia eluent bottles into the developing chamber, letting the paper towel soak up some of the eluent as it is poured in.

**2: Pouring eluent into developing chamber**

## 3.2. Sample preparation

Depending on the form of your sample (powder, pill, plant material, etc), it should be prepared differently.

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### 0.0.1 Blotters

1. Add a half (or a quarter) of the blotter to the eppendorf or small vial. Add a tiny amount of methanol, ethanol, IPA (or distilled/mineral water, NOT tap water), just a drop, doesnt even have to cover the blotter just soak part of it.

2. Move the blotter a bit around to wet it.

3. Using the microcapillary, submerge the tip of it, even if there's very little water, by touching the liquid. It should soak at least 3microlitters (up to third line).

### 0.0.2 Pills

1- Ideally crush the whole pill, mix the powder, and then take a small portion of around 5 mg. If you dont want to break it all up for consumption reasons, scrape a bit of the center only, and put it in the eppendorf/small vial. Add a small amount of solvent like 0.5-1ml (can be vinegar, ethanol or methanol)

2- Shake/stir to ensure the actives are dissolved. Do not worry about undissolved particles.

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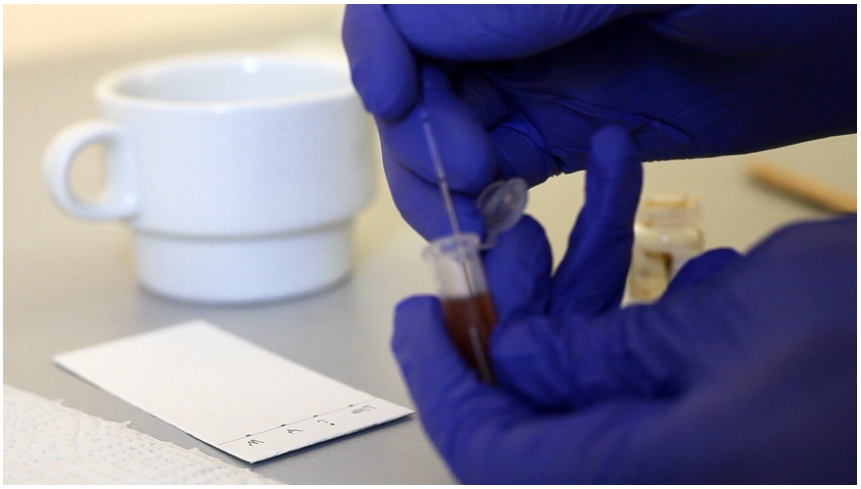
3- Using the microcapillary, submerge the tip of it just below the water line (dont submerge too deep so that it doesnt get clogged by plant material/powder on the bottom) . You'll notice it will soak up the water/alcohol quickly. Let it soak up to the third line (3 microlitters).

### 0.0.3 Powders, crystals and (semi) purified substances

1. Add small amount, half the size of a match head (around 5mg) of substance to your eppendorf or any small vial and add around 0.5-1ml of appropriate solvent (can be vinegar, ethanol or methanol). Solvent can be water for substances in salt form or alcohols (methanol/ethanol/70% IPA) for freebase substances or if you dont know in which form it is.
2. Shake/stir to ensure the actives are dissolved. Do not worry about undissolved particles.
3. Using the microcapillary, submerge the tip of it just below the water line (dont submerge too deep so that it doesnt get clogged by plant material/powder on the bottom) . You'll notice it will soak up the water/alcohol quickly. Let it soak up to the second or third line (2 - 3 microlitters). No need to be exact .



**3 Using microcapillary to soak up dissolved substance**

### 0.0.4 Cannabis

1. Testing natural cannabinoids is slightly different than other plants. First of all, add to one of the eppendorfs or a small vial 50mg of cannabis or hash (or just a small amount that fills a third of the eppendorf). To get a better idea on average content of a plant, its better to take samples from different nugs/parts of plant, break them up, mix, and then take the the sample from the homogenized mix. Add  0.5ml naphtha or hexane or similar aliphatic hydrocarbon solvent.

2. Using the microcapillary, submerge the tip of it to the solvent containing your cannabis product and let it soak up the solvent up to third line (3 microliters).
3. Put the plate on low (up to 100c) in the oven or small electric oven for 1-2 minutes (to decarboxylate the cannabinoids)

### 0.0.5 Other plant material preparation

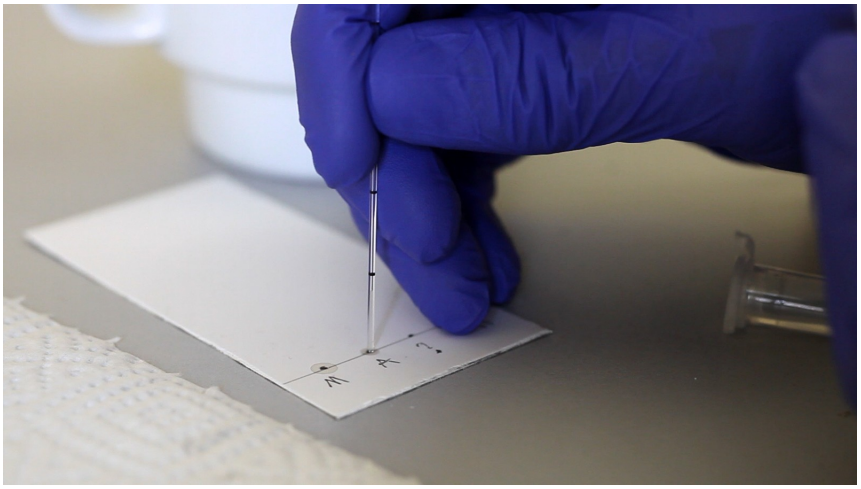
1. Collect different samples from the same plant (for example a few leaves, or different parts of the bark, etc), break it into smaller pieces and mix it well.

2. Get a small amount of the plant material and put it in the provided eppendorf or any small vial or shot glass and add small amount appropriate solvent (can be vinegar, ethanol or methanol) just enough to cover part of the material. Its better to have it concentrated rather than too dilute, since its easier to dilute later if necessary. If you want to compare amount of alkaloids in different plants, always use same amount of liquid and plant material (for example 0.1g and 2ml)

3. Close vial and shake or stir material, let stand for some minutes till any floating powder settled to the bottom

4. Using the microcapillary, submerge the tip of it just below the water line (dont submerge too deep so that it doesnt get clogged by plant material/powder) . You'll notice it will soak up the water quickly. Let it soak up to the second or third line (2-3 microlitters). No need to be exact unless you're doing semi-quantification. In that case, if it soaks up more, just lightly touch the end of it in a paper towel and it will release some water, or submerge more in the plant water to soak up and reach desired level.

## 3.3. Loading and Running the Plates



**4 Loading the plate**

1. Touch the end of the microcapillary to the points along the bottom line to “load” the sample onto the plate. You'll see as the liquid passes from the microcapillary to the plate forming a circle in the plate. Be careful not to break the microcapillary so dont press hard, just touch it lightly. You can clean the microcapillary to reuse it by soaking it up with plain solvent, whichever was used to dissolve your sample, and removing the solvent from it by touching a paper and repeating a couple of times. Load all substances you want to test, each substance in one column. Wait for circles to dry before passing to the next step. Dont forget to label the bottom of the column with a pencil to know what substance is in which column
2. Carefully put the plate inside the developing chamber/jar containing your solvent so that it stays upright, leaning against the front or back wall. A little diagonal is fine, not too much tilted or especially dont let it fall down completely into the water. The line where you loaded all your samples should be
above the solvent line, if for some reason due to the size of your container there's a too wide solvent layer on the bottom and your sample line would be submerged, remove some solvent before putting your plate.
3. Let it soak up the eluent. You should clearly see the darker solvent line raising as your plates soak up the eluent. It should soak up to the top of the plate. Please pay attention when it is nearing the top, and once it does, open the jar, remove the plate and put it in a clean table or area to finish air drying. If you remove before the solvent is completely to the top of the plate, mark with a pencil the line up to where the solvent went (this will be necessary for interpreting the results). Do not open the jar top before it has reached the top. If you must open the jar to look if it has reached the top, do it quickly and close the jar again if eluent hasn’t reached the top

It might take anywhere around 20min - 3hr to completely reach the top.

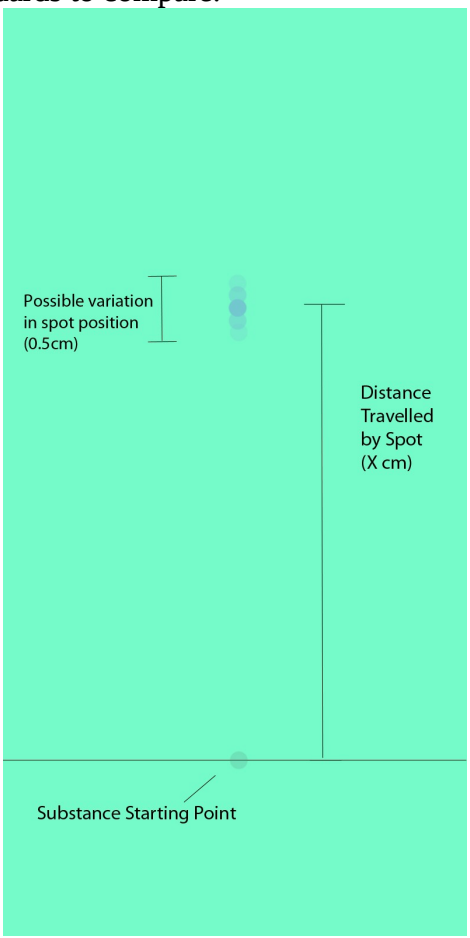

**5 Plate starting to run and soak up the eluent**

## 3.4. Results

### 0.0.6 Recording/Observing Results

1. Once it's dry, it's time to look at the plates. The first step is to look under 254nm UV light. Make a small dot with a pencil on the “center of mass” of each spot so that you can record their position after you turned off the UV light.

Now you have three options to interpret the results, one quicker, and one more complex, and one when you have substance standards to compare.

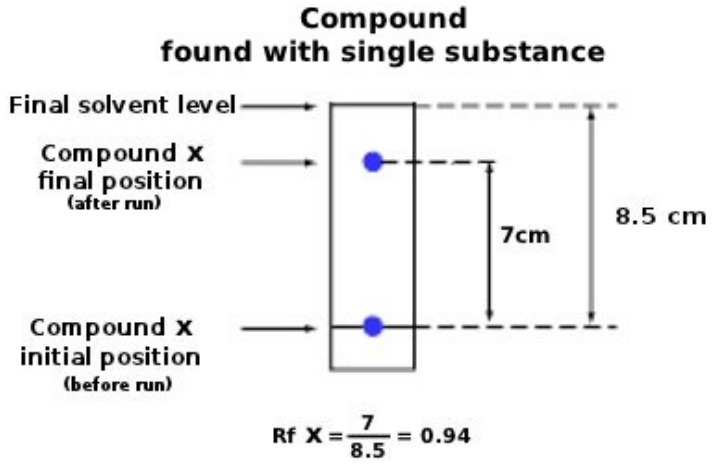


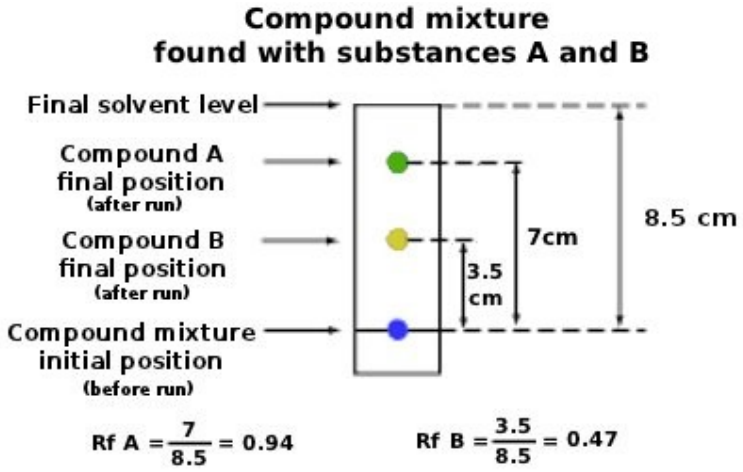

**6: How to measure height of spot**

2. A – SIMPLER - Measure with a ruler the height of any spot or spots that appear in the column of your tested compound, with 0 of your ruler being in the line where the spot started (see image below). Look at section below (3.4.2) for the substance you are testing or looking for, and compare the height of your measured spot with stated height on the

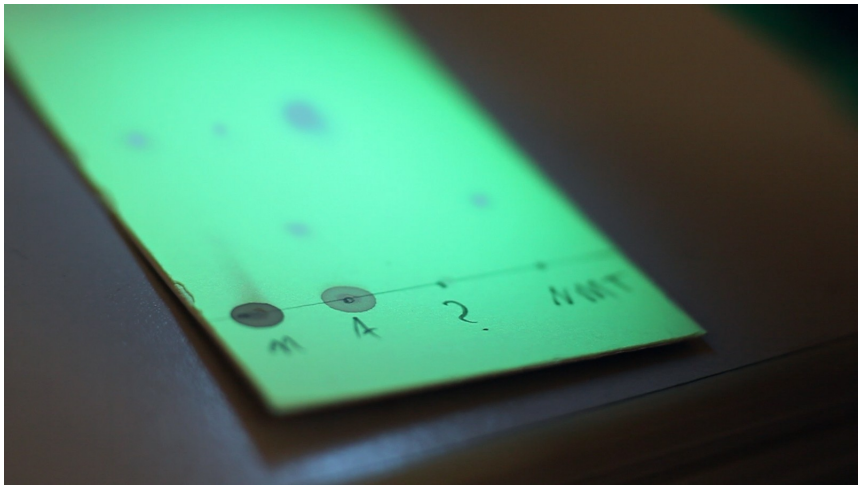
list. Then turn off UV light, and use one of the reagents stated in the list below, putting one drop where the spots were, and pay attention to reaction. See if reaction color matches that of results in section 3.4.2. If height and reagent color reaction match, it is probably the expected substance. If height and/or reagent color do not match, consider it an ´unknown´ substance. Ideally, repeat test and use different reagents to help confirming identity. Post your results in the tlconscious.me forum to get help with interpreting results.

B- MORE COMPLEX - Measure the Rf of each spot. This is done by measuring with a ruler the distance from the starting point where you loaded the substance to the position where the spot is now after runing the plate, and dividing by the distance the solvent went up in the plate. If there's only one spot in the column, the compound you loaded onto the plate was a single substance, if more spots are found, it means it was a mixture, and each spot corresponds to one substance. (look at image 7 below for more info)
Then use one of the reagents provided (look below to decide which one) and put a drop on the substance spots (looking under normal light, not UV), and observe color changes. Compare results with substances in the substance information table (provided as another file separately from instructions manual) or with published literature values, or look at item below for a sum up of substances and their common adulterants. If you are unsure about an identification, it is better to run the plates again with the sample and drop another of the reagents, because by comparing the colors that the substances turn in different reagents you get less chance of a misidentification..






**7: Examples of how to measure Rf**



**8: Plate being looked under UV to interpret results.**

C- WITH STANDARDS. Simply visually compare the height of the spot and the color it changes when dropping any of the reagents you have in your kit. The more times you repeat and test and use different reagents (considering the unknown substance and the standard results are the same), the more probable the correct identification is.

### 0.0.7 Substance results and the common adulterants.

Results below are a *selection* of most common substances and adulterants. Also the distance measurements given below are for eluent sent with the kit (99%IPA + 25% ammonia in 100:2.5

ratio) For complete table with Rf/distance results with other possible eluents and more substances, please refer to the Substance Information XLS file or at www.tlconscious.me forum.

Distance results are given in height of spot, measured from initial spot-loading line to final spot position, using the 10x5cm plates included in the kit (as shown in image 6 above). For those using plates of different size and needing Rf values, consult the XLS file.

Color changes for reagents given below might include the possible changes over-time in the color. For example if when using marquis reagent a substance first turns blue, then black, below you will read: ***MA:*** *Blue->Black*

Marquis = MA
Mecke = ME
Ehrlich = EHR
p-DMAB-TS = TS

Symbols below for substances:

 Psychoactive

 Psychedelic (be specially mindful of set and setting when consuming)

 Toxic at low doses;

 Very Potent (Careful with dosage. Substances active at micrograms or few milligrams)

 Research Chemicals with unknown short/long-term effects.

 other health concerns (check tlconscious.me for more info) .

### 0.0.7.1 MDMA

If the plate with your supposed MDMA sample comes out with more than one single spot that positively matches MDMA, do not consume!

 **MDMA**: X cm *(to be added at next manual update)*
MA: Dark blue/purple-> Black
ME: Dark blue/purple-> Black
EHR: No reaction
TS: No reaction

Possible adulterants/impurities:

 **Caffeine :** X cm *(to be added at next manual update)*
MA: No reaction
ME: No reaction
EHR: No reaction
TS: No reaction

 **Paracetamol:** X cm *(to be added at next manual update)*
MA: No reaction
ME: No reaction
EHR: No reaction
TS: No reaction

 **Methylone:** X cm *(to be added at next manual update)*
MA: Yellow

 **Methamphetamine:** X cm *(to be added at next manual update)*
MA: Orange
HER: No reaction

 **Amphetamine:** X cm *(to be added at next manual update)*
MA: Orange
ME: Brown
HER: No reaction
TS: No reaction

 **PMA:** X cm *(to be added at next manual update)*
MA: No reaction

 **PMMA:** X cm *(to be added at next manual update)*
MA: No reaction

### 0.0.7.2 DMT / 5-MeO-DMT

DMT from natural sources is often found together with NMT, which is not undesirable. If there are any spots apart from NMT and DMT (or potentially 5-MeO-DMT), better do not consume! 5-MeO-DMT is significantly more potent than DMT, beware!

 **DMT**: 2.28 cm
MA: Brown
ME: Brown/wine
EHR: Pink/violet purple
TS: Yellow

 **5-MeO-DMT**: 2.18 cm
MA: Brown
ME: Brown/wine
EHR: Purple->Blue (after 5 mins)
TS: Yellow->Green (fast)

 **NMT**: 0.83 cm
MA: Brown
ME: Reddish brown
TS: Yellow

 **Gramine**: 1.35 cm
MA: Black
ME: Black
EHR: No apparent reaction

 **Bufotenine**: **:** X cm *(to be added at next manual update)*
MA: Brown
ME: Brown/wine
EHR: Purple->Blue (after 5 mins)
TS: Yellow->Green (fast)

### 0.0.7.3 LSD

LSD appears as a blue UV-shining spot on the top of the plate. Most other substances sold as LSD either appear lower more towards middle of the plate, or they don't shine such a characteristic blue under UV. It is important to make sure you don´t have any other substance because most fake LSD contains one of the substances below which have significantly longer duration, are more toxic, have unknown long term side effects or have other possibly unwanted characteristics.

 **LSD**: X cm *(to be added at next manual update)*
*Shines clearly blue under UV light*

Possible Adulterants:

 **DOB**: X cm *(to be added at next manual update)*
MA: Green

 **DOC**: X cm *(to be added at next manual update)*
MA: Green

 **DOI**: X cm *(to be added at next manual update)*
MA: Dark Green

 **DOM**: X cm *(to be added at next manual update)*

 **Bromo Dragon Fly**: X cm *(to be added at next manual update)*
MA: Dark blue

 **25I-nBOME**: 4.7 cm
MA: Orange/red
ME: Greenish yellow
TS: No apparent reaction

 **25C-nBOME**: X cm *(to be added at next manual update)*
MA: No apparent reaction

### 0.0.7.4 Amphetamine/Speed

Amphetamine is very often found with caffeine as adulterant. Caffeine is not toxic at dosages found but might increase heart rate and lead to other possibly unpleasant somatic effects. Methamphetamine has a significantly lower dosage, more side effects and lasts longer, hence it´s very important to take it in account if amphetamine is found with methamphetamine.

 **Methamphetamine:** X cm *(to be added at next manual update)*
MA: Orange
HER: No reaction

 **Amphetamine:** X cm *(to be added at next manual update)*
MA: Orange
ME: Brown
HER: No reaction
TS: No reaction

 **Caffeine:** X cm *(to be added at next manual update)*
MA: No reaction
ME: No reaction
EHR: No reaction
TS: No reaction

### 0.0.7.5 - 2Cx (2CB, 2CC, 2CD, 2CE, 2CI etc)

 **2CB**: 1.4 cm
MA: Green
ME: Orangeish yellow
EHR: No apparent reaction
TS: No apparent reaction

 **2CB fly**: 1.12 cm
ME: Brown

 **2CC**: 1.4 cm
MA: Yellow->light green
ME: Greenish yellow

EHR: No apparent reaction
TS: No apparent reaction


**2CD**: 1.6 cm
MA: Yellow
ME: Greenish yellow
EHR: No apparent reaction
TS: No apparent reaction


**2CE**: 1.6 cm
MA: Yellow
ME: Greenish yellow
EHR: No apparent reaction
TS: No apparent reaction


**2CI**: 1.45 cm
MA: Very dark green
ME: Dark reddish brown
EHR: No apparent reaction
TS: No apparent reaction

For more substances, please refer to Substance Information XLS file.

# 1 EXTRAS

The following steps are not necessary for the workings of the kit but may be useful for some people and hence are included in the kit instructions

## 1.1 Crude alkaloid/substance quantity comparison

If you want to find which plant has more of a certain substance, simply dilute the same amounts of the different samples to be compared in the same volume of solvent before loading the plate. The substance spots are relative to concentration, so a bigger spot means more of that substance. If you test many plants using same dilution, then the one with bigger spot will have more of that substance.

## 1.2 Semi quantification with standard

Size of spot is more or less representative of the amount of the substance. If you dilute an amount of an alkaloid you have as a ‘standard’ (for example purified extracted DMT) in different

quantities, you can later compare plants tested to have an idea how much DMT is in different plants.

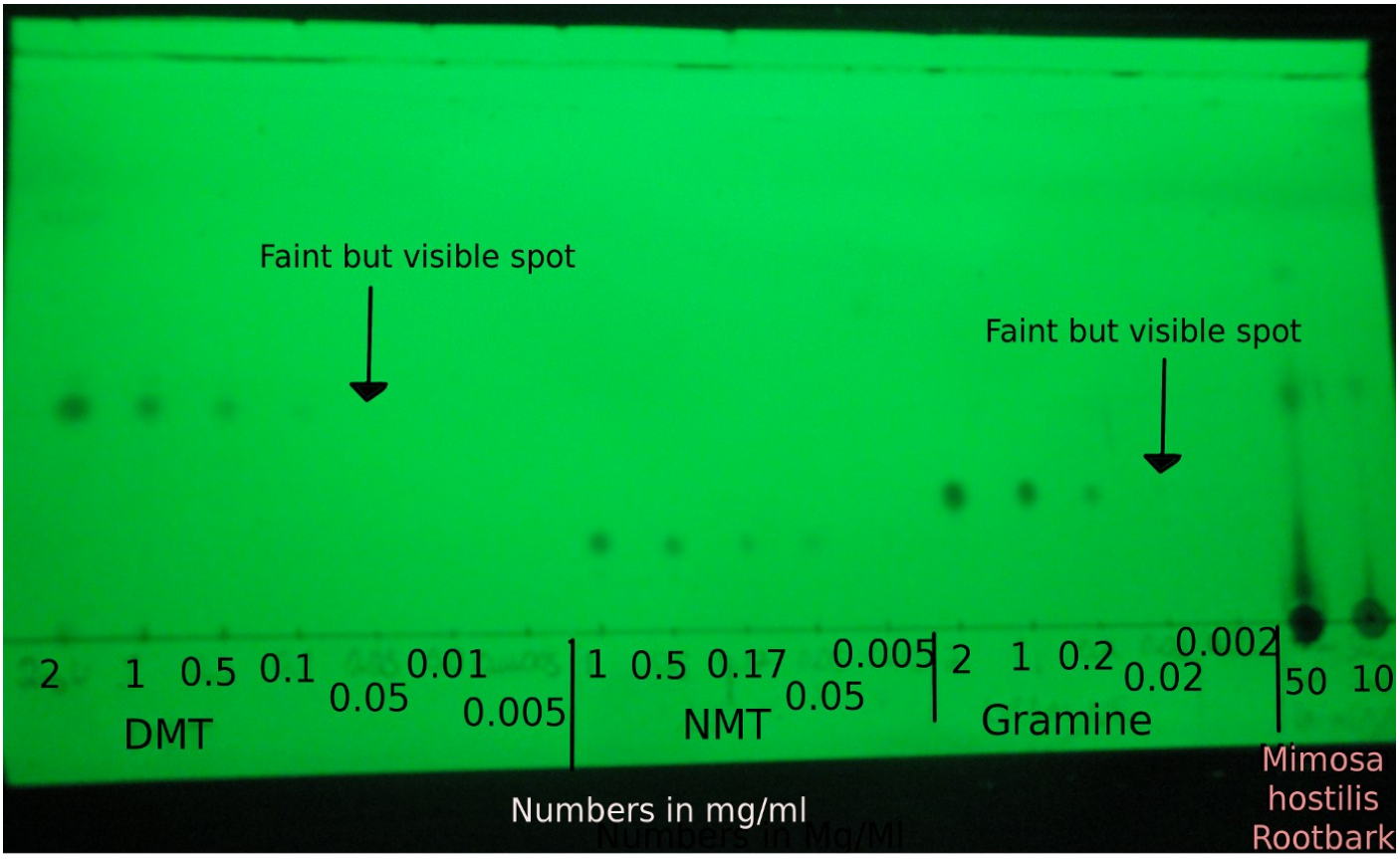
As an example (change the word DMT for any alkaloid you are interested in)

1. Dilute 20mg of DMT in 10ml of ethanol or IPA or methanol or acidified water. This will be your vial A with 2mg/ml solution (label the vial!)
2. Get 1ml of this solution and add to another vial B, and to vial B also add 1ml pure solvent (the same you used for diluting your substance). Now vial B has 0.5mg/ml.
3. Get 1ml of vial A and add to vial C with another 9ml of solvent, so vial C has 0.1mg/ml.
4. Get 1ml of vial C and add it to vial D, with another 1ml solvent, so you have 0.05mg/ml
5. etc (have around 4-8 different dilutions in total, and run a plate or two with them)

6. Now, with break down/powder your plant material and soak it in 2ml ethanol or IPA or methanol or hot water per 100mg of plant material (no need to do this on big amounts, small amount is representative of the rest). Let it soak for some minutes, and then decant the liquid into another container. Let the liquid sit for a moment so that plant material falls to the bottom, and using the microcapillary, get 3 microlitters and load that onto the plate.
7. After plate has run and dried, look at with which column the alkaloid spot in your tested plant column is most similar to in terms of intensity and spot size. Only compare the same substance (for example DMT in your plant column with the DMT standard columns).

When using 50mg/ml:

| Column your alkaloid spot most resembles in size | Estimated % of alkaloid in plant |
|---|---|
| **2 mg/ml** | 4% |
| **1mg/ml** | 2% |
| **0.5mg/ml** | 1% |
| **0.2mg/ml** | 0.4% |
| **0.1mg/ml** | 0.2% |
| **0.05mg/ml** | 0.1% |
| **0.02mg/ml** | 0.04% |
| **0.01mg/ml** | 0.02% |
| **0.005mg/ml** | 0.01% |
| **0.002mg/ml** | 0.004% |

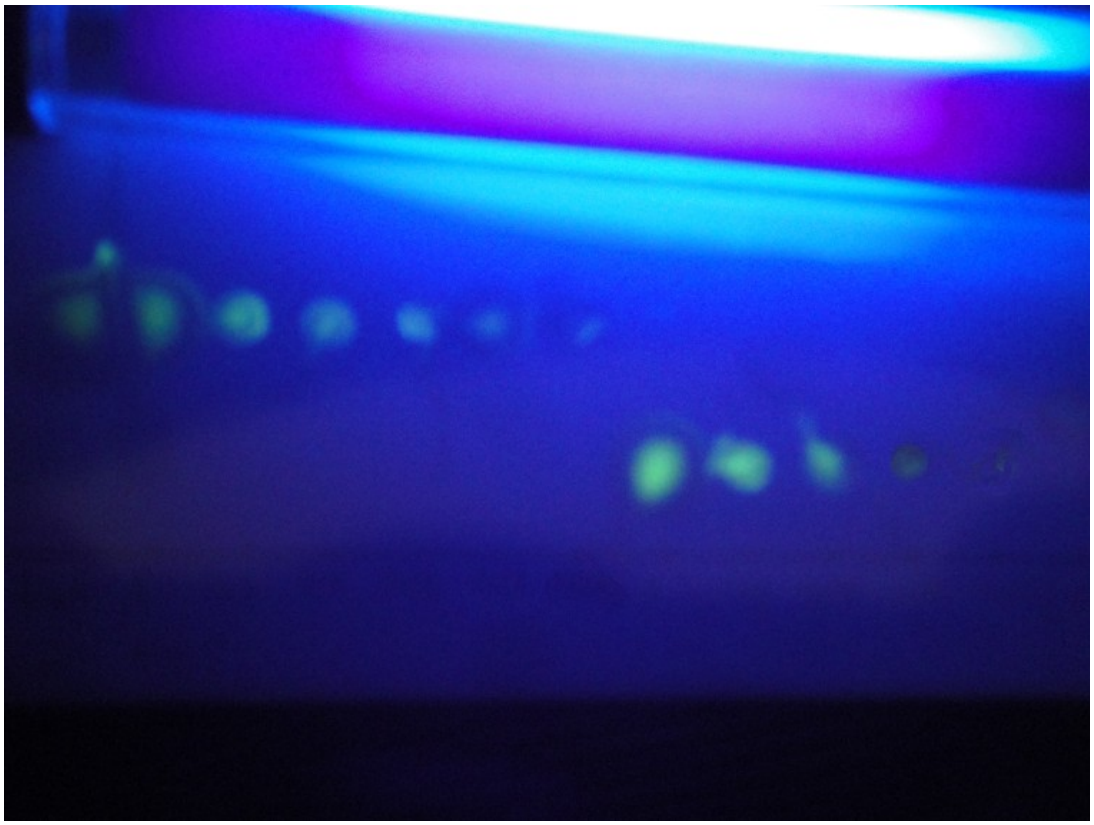



**9: Example of semi-quantification of DMT content in Mimosa by comparing with DMT/NMT/Gramine standard**

In the example above, mimosa can be estimated to have 2% DMT since at 50mg/ml dilution of mimosa in water, it resembles the spot at 1mg/ml.

## 1.3 Detecting small amounts of DMT

To detect very small amounts of DMT and NMT under 0.1% in a plant, soak it in 50mg/ml water for some minutes, add 3 microliters to the plate, run it. Then drop p-DMAB-TS at the height DMT should be in, in the column of your suspected dmt-containing plant sample. Look under 365 UV light (normal black light). Both DMT as well as NMT should grow strongly in green color. Even concentrations down to 0.01% of those alkaloids, one can notice a distinct glow. Look at picture below of same plate as above after p-DMAB-TS viewed under 365nm UV light. Notice down to the lowest concentrations of NMT and DMT one can still see the shine. Note this does not work well with old p-dmab reagent.



**10: Example detection of small amounts of DMT/NMT using p-DMAB-TS and 365UV light**

# 5. TROUBLESHOOTING & SUPPORT

If your doubts or problems are not answered below, please register/log in to the www.tlconscious.me page, enter the forum and ask your questions there.

## 5.1. Plates

**The plates are too big, I only want to test one or two substances, I don't want to waste plates.**

- You can cut the plates vertically right between where the dots are marked to put each substance. To cut it, use a ruler and an x-acto knife or similar. Scissors also work but more poorly, since sometimes the silica dust peels off easily. Do not breathe in the dust from silica that comes off the plate when cutting it.

## 1.4 Solvent/Eluent

**The solvent is rising unevenly in the plate**

- Make sure that you have soaked a paper towel on the back of your developing-container to help saturating the container with the solvent vapors, which helps making the solvent rise evenly.
- Also make sure to wait a couple of minutes after loading the plate with substances so that the plate is completely dry.
- See if the table or surface where the developing-container is, is leveled horizontally.
- Add the plate slowly to the developing-container so as to not move the solvent too much creating waves that make the plate already start soaking the solvent unevenly.

## 5.3. Spots

**Spots are way too big or form a streak instead of a neat spot**

- This usually means the substance is too concentrated when loading it to the plate. So add more of whatever solvent you are using to dilute the sample, and try again.
- It is also possible the ammonia contained in the eluent has evaporated and hence creating such streaks instead of spots. If the suggestion above didn´t help, it´s time to change the eluent. Discard the eluent in the loading chamber and add fresh eluent provided with the kit, or prepare new eluent according to instructions in section 6 below.

**I see no spots in the plate after running it**

- Either this means there are no active substances in your sample, or they are very diluted. Concentrate more your sample (dilute more substance in less solvent) and then load another plate and try again.

**There's a inverse-triangle-shaped spot on the top of the plate**

- This possibly means your substance is in fumarate form (common when testing 4-AcO-DMT). That is not a problem, not considered an impurity.

## 5.4. Rf/Height of spot

**Rfs/Heights of spot are varying too much.**

1. It is normal that there is a certain variation due to air pressure, temperature and so on. Give a +- 0.1 error to the Rf, or +-0.25cm
2. If one spot is way too big or small, make the sample less or more concentrated and try again, since it is normal that very concentrated samples can have a higher Rf.
3. The occurrence of multiple substances in a single sample can at times affect the Rf of one or more spots by 'pulling' effect.

## 5.5. Reagent and colors

**No visible reaction or color change after using the reagent**

- Either the spot/substance indeed does not react with a given reagent, or possibly the

concentration is too low. Make a more concentrated dilution of the sample and test again. If when testing there is only one spot on the plate, you can also try dropping the reagent directly to a bit of your substance without putting it on the plate (remember this will make the tested portion unusable, it will have to be thrown away)

### 5.6. Other

**I cannot find any substance that matches the Rfs/color reactions in the results table**

- First make sure to give a certain margin of error for the Rf (+-0.1 Rf).
- Also consider increasing concentration of sample and testing again to see if color reactions are more clear, or diminishing concentration if spots are too large.
- Remember to look at the table for 'typical adulterants/impurities' to see if there are any potential matches.
- If you still cannot find any matching answer, then it is best to consider the spot as an 'unknown'. While this may seem unsatisfying, it is better to be safe than sorry.. If a substance isn't a good match to what you were expecting, then regardless of what the result is, it is better to avoid using that substance, whether you are considering using it as a standard, or to ingest, or whatever other reason.

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## 6. ELUENT PREPARATION

This section is not necessary for the working of the kit since the kit comes with the eluent already, so this section should be considered only as extra information. While the Substance Analysis Kit includes the eluent, the eluent we provide may evaporate or become unusable at some point due to evaporating ammonia, or maybe some substances of interest do not separate as well with the standard eluent, and another kind can be prepared. Below are the instructions on how to prepare a few different eluents for which we have included information on spot height in the Substance Information Table XLS file.

- **Preparation of solvent**

Prepare any of the following solvent mixtures. Please remember that the amounts below are given for making 100ml of eluent due to easier measuring of amounts, but only a small fraction of that (like 10ml) will be necessary to be added to the developing chamber when testing, so store the rest in an airtight container.

**SOLVENT SYSTEM A** (65.6% IPA + 0.625 % Ammonia)

| **What can you find?** | **Ammonia 23-25%** | **Ammonia 10%** | **Ammonia 5%** |
|---|---|---|---|
| **Isopropanol 99.5%** | 65.9ml IPA + 2.6ml | 65.9ml IPA + 6.25ml | 65.9ml IPA +12.5ml |

| | | | |
|---|---|---|---|
| | Ammonia + 31.5ml water | ammonia + 27.8ml water | ammonia + 21.6ml water |
| **Isopropanol 91%** | 72.1ml IPA + 2.6ml ammonia + 25.3ml water | 72.1ml IPA + 6.25ml ammonia + 21.7ml water | 72.1ml IPA + 12.5ml Ammonia + 15.4ml water |
| **Isopropanol 70%** | 65.9ml IPA, 2.06ml ammonia, 31.5ml water | 93.7ml IPA + 6.25 ml ammonia | - Not possible |

**SOLVENT SYSTEM B** (35% Ethanol + 0.625% Ammonia)

| **What can you find?** | **Ammonia 23-25%** | **Ammonia 10%** | **Ammonia 5%** | **Ammonia 4%** |
|---|---|---|---|---|
| **Ethanol 96%** | 36.5ml ethanol + 2.6ml ammonia + 60.9ml water | 36.5ml ethanol + 6.25ml ammonia + 57.3ml water | 36.5ml ethanol + 12.5ml ammonia + 51ml water | 36.5ml ethanol + 15.6ml ammonia + 47.9ml water |
| **Ethanol 95%** | 36.8ml ethanol + 2.6ml ammonia + 60.5ml water | 36.8 ethanol + 6.25ml ammonia + 56.9ml water | 36.8ml ethanol + 12.5ml ammonia + 50.7ml water | 36.8ml ethanol + 15.6ml ammonia + 47.5ml water |
| **Ethanol 70%** | 50ml ethanol + 2.6ml ammonia + 47.4ml water | 50ml ethanol + 6.25ml ammonia + 43.75ml water | 50ml ethanol + 12.5ml ammonia + 37.5 water | 50ml ethanol + 15.6ml ammonia + 34.4ml water |
| **Ethanol 50%** | 70ml ethanol + 2.6ml ammonia + 27.4ml water | 70ml ethanol + 6.25ml ammonia + 23.75ml water | 70ml ethanol + 12.5ml ammona + 17.5ml water | 70ml ethanol + 15.6ml ammonia + 14.4ml water |
| **Ethanol (or vodka) 40%** | 87.5ml ethanol + 2.6ml ammonia + 9.9ml water | 87.5ml ethanol + 6.25ml ammonia + 6.25ml water | 87.5 ethanol + 12.5ml ammonia | Not possible |
| **Ethanol (or vodka) 37.5%** | 93.3ml ethanol + 2.6ml ammonia + 4.1ml water | 93.3ml ethanol + 6.25ml ammonia + 0.4ml water | Not possible | Not possible |

**SOLVENT SYSTEM C** (45% Ethanol + 0.625% Ammonia)

| **What can you find?** | **Ammonia 23-25%** | **Ammonia 10%** | **Ammonia 5%** | **Ammonia 3%** |
|---|---|---|---|---|
| **Ethanol 96%** | 46.9ml ethanol + | 46.9ml ethanol + | 46.9ml ethanol + | 46.9ml ethanol + |

| | | | | |
|---|---|---|---|---|
| | 2.6ml ammonia + 50.5ml water | 6.25ml ammonia + 46.9ml water | 12.5ml ammonia + 40.6ml water | 20.8ml ammonia + 32.3ml water |
| **Ethanol 95%** | 47.4ml ethanol + 2.6ml ammonia + 50ml water | 47.4ml ethanol + 6.25ml ammonia + 46.4ml water | 47.4ml ethanol + 12.5ml ammonia + 40.1ml water | 47.4ml ethanol + 20.8ml ammonia + 31.8ml water |
| **Ethanol 70%** | 64.3ml ethanol + 2.6ml ammonia + 33.1ml water | 64.3ml ethanol + 6.25ml ammonia + 29.5ml water | 64.3ml ethanol + 12.5ml ammonia + 23.2ml water | 64.3ml ethanol + 20.8ml ammonia + 14.9ml water |
| **Ethanol 50%** | 90ml ethanol + 2.6ml ammonia + 7.4ml water | 90ml ethanol + 6.25ml ammonia + 3.75ml water | Not possible | Not possible |

**SOLVENT SYSTEM D (**76% ethanol + 0.625% ammonia)

| **What can you find?** | **Ammonia 23-25%** | **Ammonia 10%** | **Ammonia 5%** | **Ammonia 3%** |
|---|---|---|---|---|
| **Ethanol 96%** | 79.2ml ethanol + 2.6ml ammonia + 18.2ml water | 79.2ml ethanol + 6.25ml ammonia + 14.6ml water | 79.2ml ethanol + 12.5ml ammonia + 8.3ml water | 79.2ml ethanol + 20.8ml ammonia |
| **Ethanol 95%** | 80ml ethanol + 2.6ml ammonia + 17.4ml water | 80ml ethanol + 6.25ml ammonia + 13.75ml water | 80ml ethanol + 12.5ml ammonia + 7.5ml water | Not possible |

**SOLVENT SYSTEM E** (97.5ml 96% Ethanol + 2.5ml 23-25% ammonia)

**SOLVENT SYSTEM F** (97.5ml methanol + 2.5ml 23-25% ammonia)

**SOLVENT SYSTEM G (for cannabis)** (toluene)

# 7. GLOSSARY

**Developing chamber**
The container where the eluent and plate are put into, when running the plates.

**Eluent**

The liquid solvent used to soak the TLC plate and carry the compound/s upwards through the plate so that separation of different substances can occur. In this kit, usually used IPA:Ammonia in 100:2.5 ratio.

**Microcapillary**
Small glass tubes that can pull a small quantity of liquid inside of it without the need for any suction device. It works through capillary action, hence the name.

**TLC**
Thin Layer Chromatography. The technique used in this kit, consisting of a thin layer of stationary phase (in this case silica gel with aluminium support) and a mobile phase (the eluent, in this kit usually IPA and ammonia).

# 8. CLOSING NOTES AND SPECIAL THANKS

For more information contact us at tlconscious@gmail.com or join our forum after registering/login in at www.tlconscious.me .

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