

A&L CANNABIS LABS UPDATE



Soil2Oil™
A&L CANNABIS LABS

Water Activity Testing in Cannabis

- Importance of Water Activity
- Water Analysis Services
- Resources to learn more

A&L Canada Laboratories Inc. - Cannabis Testing
QUICK URL: www.alcannabislabs.com
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Water Activity Testing in Cannabis – November 2021

Water activity (Aw) is widely recognized for the safety it provides to food because of its control of microbial growth and is considered a critical control point for preventing microbial contamination. Water activity provides this same determination of safety in cannabis. Water activity is important for the safety of cannabis edibles, but it is also critical data for storage stability of harvested dried cannabis flower, extracts, and other formulated products.

WHY WE ARE INTERESTED IN WATER ACTIVITY WHEN WE HAVE MOISTURE ANALYSIS ALREADY:

- The most common moisture/water content determination in cannabis is Loss on Drying (LOD) method; usually using Halogen moisture meter (@105°C). This method is known to overestimate moisture because of the volatile compounds in cannabis flower where both Terpene loss and acid decarboxylation adds to the moisture value. This means each strain, lots or subsample can have a different amount of these compounds contributing to the overestimation.
- There are many variables in the LOD analysis from instruments to settings, which means it is difficult to align moisture values with other labs, or internal meters.
- There is no industry standard moisture value for all dried flower to provide pass fail.
- LOD is not suitable for water content in some other matrix, eg. Extracts and many formulated products.
- While there is another option for water content (Karl Fischer (KF) Titration) most equipment manufactures will warn against this method for dried cannabis because of the difficulty with the matrix in extracting the water for measurement. This can lead to underestimation of water content. The difficulty of the method & cost of KF also is a barrier for many laboratories and LH's.

The determination of water content is important to ensure proper drying, curing, and good storage to mitigate microbial growth. Make sure you are not over drying which can lead to poor product, damaged trichomes, and Terpene loss. There is an ASTM standard now for Aw testing and specification on Cannabis (ASTM D8197 – 21: Standard Specification for Maintaining Acceptable Water Activity (Aw) Range (0.55 to 0.65) for Dry Cannabis Flower Intended for Human/Animal Use <https://www.astm.org/Standards/D8197.htm>). The researchers at Novasina were involved in this standard <https://www.novasina.ch/application/water-activity-in-cannabis/>.

With water content being such an important part of the flower quality, indication of curing and shelf-life stability, it is likely the Cannabis industry will want water content values that are easier to compare and interpret.

LOD analysis and reporting can be a difficult value to determine if the water content is appropriate for each lot or strain. If the product is overdried or under dried and not shelf stable. We foresee water activity becoming a common method and limits are standardized and well defined specifically for Dried Cannabis and other products.

In addition, Aw values can be used to calculate a moisture value using a Moisture sorption isotherm model.

With the options of LOD moisture, Aw, and possible moisture sorption isotherms, License Holders can have a number of low cost metrics to determine the water content of their dried flower and other products.

A&L Canada Laboratories provided Water activity analysis for Cannabis:

ANALYSIS	CODE	AMOUNT	TAT
Water Content/Moisture Moisture (Loss of Drying) *Recommended for Potency & Terpenes tests*	MOISTMM	2 g	3 days
Water Activity (Aw) – Recommended for all Dried cannabis to accompany Moisture/LOD. Recommended for edibles/food	BAWF610	2 mL	3 days

Please find presentations on Aw and its importance included below, also shown are key charts on Aw from those presentations.



A&L would be happy to have any feedback on this topic if this relates. The A&L team is working to get more clients to pay attention to this as LOD alone often causes controversial results based on some strains, terpene levels, etc. For more information, please contact Daryl Patterson:

Daryl Patterson

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PRESENTATIONS:

In the presentations below, there are two major equipment manufactures for Water activity, Neutec (Novasina) & Meter Group (Aqualab). Provided are presentations & links to both manufactures and how water activity affects Cannabis. In addition, Boveda provides information on humidity control on cannabis storage quality and water activity.

VIDEO: WHY MEASURE WATER ACTIVITY IN CANNABIS – NEUTEC GROUP (NOVASINA)

Dr. Brady Carter goes over why water activity in cannabis is so important.

https://www.youtube.com/watch?v=8E_I-wHETWM&ab_channel=neutecgroup

VIDEO: WATER ACTIVITY AND CANNABIS – METER GROUP INC (AQUALAB)

Brian Rice, Director of R&D at Boveda, and John Russell, METER Food Application Support Specialist

https://www.metergroup.com/food/events/water-activity-and-cannabis/?sbr=1m_TFfqP-y5bzd1QSDQ6rg%3D%3D%24-ZX-eBTMX192JE0wYJ-InA%3D%3D

- *Brian Rice explains maximizing harvest profits with humidity control and how Aw is used to determine proper moisture. Some overlap in below video.*
- *John Russell – Meter Group – John explains Aw measurements and what they mean to Cannabis for safety of microbial growth.*

VIDEO: TERPENE EVAPORATION: THE SILENT PROFIT KILLER

Brian Rice & Scott Swail – Boveda, Webinar by SHYIELD Disinfectants [Boveda on Aw, and Terpene/Trichomes quality]

<https://shyield.ca/webinars/webinar-terpene-evaporation-the-silent-profit-killer-brian-rice-scott-swail-boveda/>

- *In this webinar, experts from Boveda walk you through: - Post-harvest methods which preserve terpenes from evaporation and why trichome health is important. - What happens to cannabis with and without humidity control and the subsequent effects that can impact your profits. - What water activity (aW) is and the target moisture levels that will maintain cannabis quality and improve economic gains Guest Speakers: Brian Rice - Director of R&D at Boveda Scott Swail - Sales Executive at Boveda*

CHARTS FROM PRESENTATIONS:

Microbial Growth in Cannabis is determined by its water activity	
Aw Limit	Microorganisms
0.91	Gram Negative Bacteria
0.86	Gram Positive Bacteria
0.88	Yeast (practical limit)
0.80	Production mycotoxins
0.70	Molds (practical limit)
0.60	Absolute limit for all growth

From: Novasina

Water Activity vs Product Failure	
Water Activity Range	Most Likely Product Failure
> 0.850	Microbial Spoilage
0.70-0.85	Microbial Spoilage Chemical Instability
0.40-0.70	Chemical Instability Texture Changes Moisture Migration
0.20-0.40	Texture Changes Caking and Clumping
>0.20	Chemical Instability

From: Novasina

Upcoming Events

Lift & Co. Expo

November 18 - 21, 2021 – Toronto, Ontario

<https://liftexpo.ca>



Feel free to use this code: **25FAN2021** to receive a 25% discount on your tickets!

Register Here: <https://liftexpo.ca/tickets/>



Grow Up Conference & Expo

November 30 to December 2, 2021 – Niagara Falls, Ontario

<https://growupconference.com>



DAY 2: INDUSTRY CONFERENCE

Join Brian Coutts, Strategy and Business Development Manager, for a discussion on the important topic of **Hop Latent Viroid (HLVd)** disease affecting the cannabis industry

Brian Coutts

A&L Canada Labs

3:35 PM to 4:05 PM

Wednesday Dec 1st

Main Stage Expo

Floor

Review of all cannabis samples analysed by A&L in the past 12 months indicates very high prevalence of Hop Latent Viroid. Over thousands of samples analysed from across Canada, a positive rate of over 25% for HLVd has been confirmed in samples tested for this viroid. This high incidence rate reinforces the need to assess plants for disease early in the growth cycle so preventative measures can be taken.



DAY 3: INDUSTRY CONFERENCE

Don't Miss: **Crop Steering with Nutrients**

Greg Patterson

A&L Canada Labs

10:00 to 11:30 AM

Thursday Dec 2nd

Ballroom A

What a cannabis plant needs and what you provide can be wildly different. Join Greg Patterson (A&L Labs) for an in-depth look at matching your nutrient delivery to the plant stage and how timing and balance can lead to higher secondary metabolite production.

A&L HOLIDAY SCHEDULE 2021



To Our Valued Clients: Please be advised that Cannabis Testing through the Holiday Season will be scaled back to permit staff vacation and operational maintenance:

<p>• DEC 17 •</p> <p>Samples submitted by Friday, December 17th for full Health Canada lot release will be completed according to standard turnaround times</p>	<p>• DEC 21 •</p> <p>Micro samples submitted by Tuesday, Dec 21st will also be completed per standard turnaround times</p>	<p>DEC 24 - JAN 3</p> <p>Regular sample analysis will not be conducted from Dec 24 through Jan 3, however the lab will be open with very limited hours and only for data & report releasing</p>
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If you have any questions, please contact your A&L account representative or email clientcarecannabis@alcanada.com www.alcannabislabs.com



A&L HOLIDAY SCHEDULE 2021

- Friday, December 24 - Open 8 am-12 pm
- Monday, December 27 - Closed
- Tuesday, December 28 - Closed
- Wednesday, December 29 - Open 9 am-2 pm
- Thursday, December 30 - Open 9 am-2 pm
- Friday, December 31 - Open 8 am-12 pm
- Monday January 3, 2022 - Closed

Return Tuesday January 4/2022 to regular hours

If you are dropping off samples after hours we have a drop box at the side of the building in the grey garden shed.

www.alcanada.com

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