

# Cannabis Purification Using Liquid Chromatography Benefits, Processes and Products



- History of Advion x Interchim
- Pesticide remediation and dewaxing
- THC remediation
- Minor cannabinoid purification
- In-house analytical
- System and Consumable options

Interchim, established in 1970, specialized in reagents for Pharmaceutical R&D.

1980

Chromatography products

Analytical and Prep/Process Purification

Now a **global leader in purification solutions**



## Rapid Winterization

- Remove undesirable lipids and waxes
- Ambient temperature
- Minimal utility requirements, 110 V 6A
- Maintain optimal flavor and potency

Chiller, JC Younger: <https://www.jcyounger.com/cannabis-cbd-chillers/>



## From Crude to Liquid Gold

Dewaxing and pesticide remediation in a single step



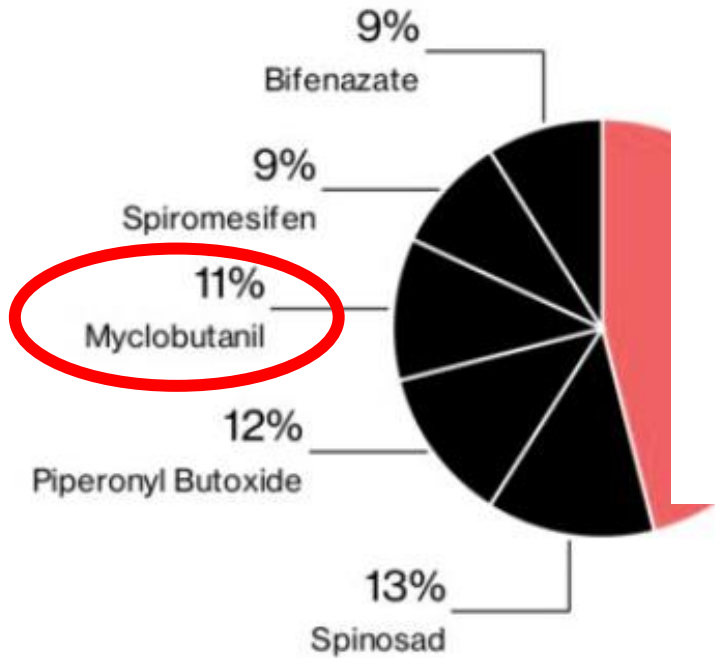
## How Hemp Can Heal Our Soil & Why It Matters To Consumers

Add this to the many uses for our favorite plant: **Industrial hemp can actually remove toxins from the soil.**

Not only can you use hemp to make dozens of sustainable [products](#), from [clothing](#), [skateboards](#) to [medicine](#), but it can also help heal the earth.



# Purification Challenges



Matrix: Concentrates & Extracts  
Type: Distillate  
Batch#:

**Pesticides** Fail

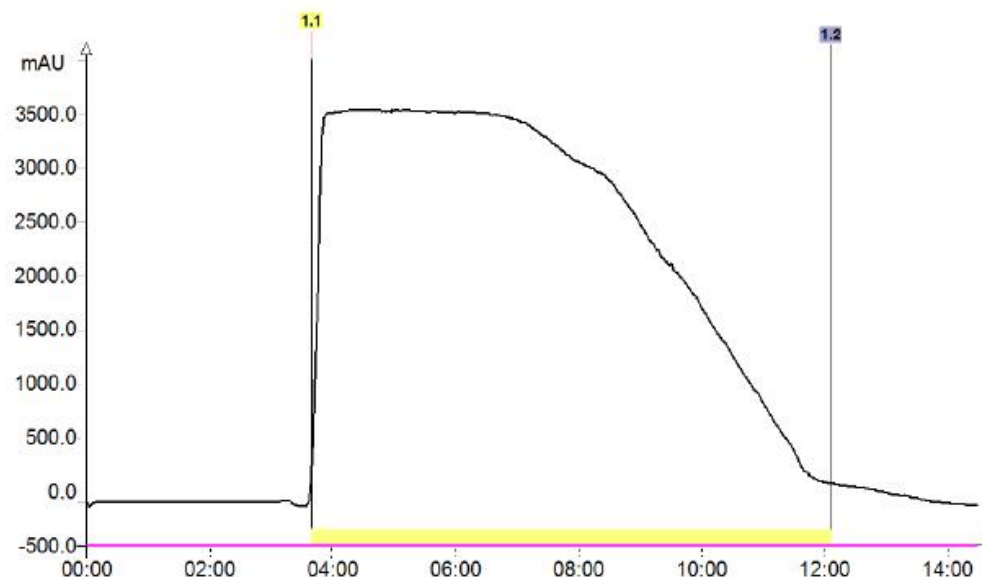
Method: PesticidesLCMS  
LC-MS

Analyte	LOD	LOQ	Limit	Result	Status	Analyte	LOD	LOQ	Limit	Result	Status
	µg/g	µg/g	µg/g	µg/g			µg/g	µg/g	µg/g	µg/g	
Abamectin	0.005	0.02	0.1	ND	Pass	Fludioxonil	0.01	0.05	0.1	ND	Pass
Acephate	0.002	0.01	0.1	ND	Pass	Hexythiazox	0.005	0.02	0.1	<LOQ	Pass
Acequinocyl	0.005	0.02	0.1	ND	Pass	Imazalil	0.05	0.1	0.05	ND	Pass
Acetamiprid	0.005	0.02	0.1	0.248	Fail	Imidacloprid	0.005	0.02	5	ND	Pass
Aldicarb	0.05	0.1	0.05	ND	Pass	Kresoxim Methyl	0.005	0.02	0.1	ND	Pass
Azoxystrobin	0.005	0.02	0.1	ND	Pass	Malathion	0.02	0.05	0.5	<LOQ	Pass
Bifenazate	0.005	0.01	0.1	0.148	Fail	Metaxyl	0.002	0.005	2	0.007	Pass
Bifenthrin	0.005	0.05	3	0.453	Pass	Methiocarb	0.05	0.1	0.05	ND	Pass
Boscalid	0.02	0.05	0.1	0.116	Fail	Methomyl	0.01	0.02	1	ND	Pass
Captan	0.05	0.1	0.7	ND	Pass	Methomyl	0.01	0.02	1	ND	Pass
Carbaryl	0.02	0.05	0.5	ND	Pass	Myclobutanil	0.005	0.01	0.1	0.257	Fail
Carbofuran	0.05	0.1	0.05	ND	Pass	Myclobutanil	0.005	0.01	0.1	0.257	Fail
Chlorantraniliprole	0.002	0.01	10	ND	Pass	Oxamyl	0.005	0.01	0.5	ND	Pass
Chlordane	0.05	0.1	0.05	ND	Pass	Paclobutrazol	0.05	0.1	0.05	ND	Pass
Chlorfenapyr	0.05	0.1	0.05	ND	Pass	Parathion Methyl	0.05	0.1	0.05	ND	Pass
Chlorpyrifos	0.05	0.1	0.05	ND	Pass	Pentachloronitrobenzene	0.01	0.02	0.1	ND	Pass
Clofentezine	0.01	0.02	0.1	ND	Pass	Permethrin	0.02	0.05	0.5	0.172	Pass
Coumaphos	0.02	0.05	0.02	ND	Pass	Phosmet	0.01	0.02	0.1	ND	Pass
Cyfluthrin	0.05	0.1	2	ND	Pass	Piperonyl Butoxide	0.002	0.01	3	0.054	Pass
Cypermethrin	0.05	0.1	1	ND	Pass	Prallethrin	0.005	0.02	0.1	ND	Pass
Daminozide	0.02	0.05	0.02	ND	Pass	Propiconazole	0.005	0.01	0.1	ND	Pass
Diazinon	0.002	0.01	0.1	ND	Pass	Propoxur	0.05	0.1	0.05	ND	Pass
Dichlorvos	0.02	0.05	0.02	ND	Pass	Pyrethrins	0.02	0.05	0.5	ND	Pass
Dimethoate	0.02	0.05	0.02	ND	Pass	Pyridaben	0.005	0.01	0.1	ND	Pass
Dimethomorph	0.005	0.02	2	ND	Pass	Spinetoram	0.005	0.01	0.1	ND	Pass
Ethoprophos	0.05	0.1	0.05	ND	Pass	Spinosad	0.005	0.01	0.1	ND	Pass
Etofenprox	0.05	0.1	0.05	ND	Pass	Spiromesifen	0.01	0.02	0.1	ND	Pass
Etoxazole	0.005	0.02	0.1	<LOQ	Pass	Spirotetramat	0.005	0.01	0.1	ND	Pass
Fenhexamid	0.005	0.02	0.1	ND	Pass	Spiroxamine	0.05	0.1	0.05	ND	Pass
Fenoxycarb	0.05	0.1	0.05	ND	Pass	Tebuconazole	0.005	0.01	0.1	ND	Pass
Fenpyroximate	0.005	0.02	0.1	ND	Pass	Thiacloprid	0.02	0.05	0.02	ND	Pass
Fipronil	0.05	0.1	0.05	ND	Pass	Thiamethoxam	0.005	0.01	5	ND	Pass
Flonicamid	0.01	0.02	0.1	ND	Pass	Trifloxystrobin	0.005	0.01	0.1	0.010	Pass

Data: Oregon Medical Marijuana Program, <https://leewebdesign.com/pot-laced-pesticides-forces-states-act-epa-stays-away/>

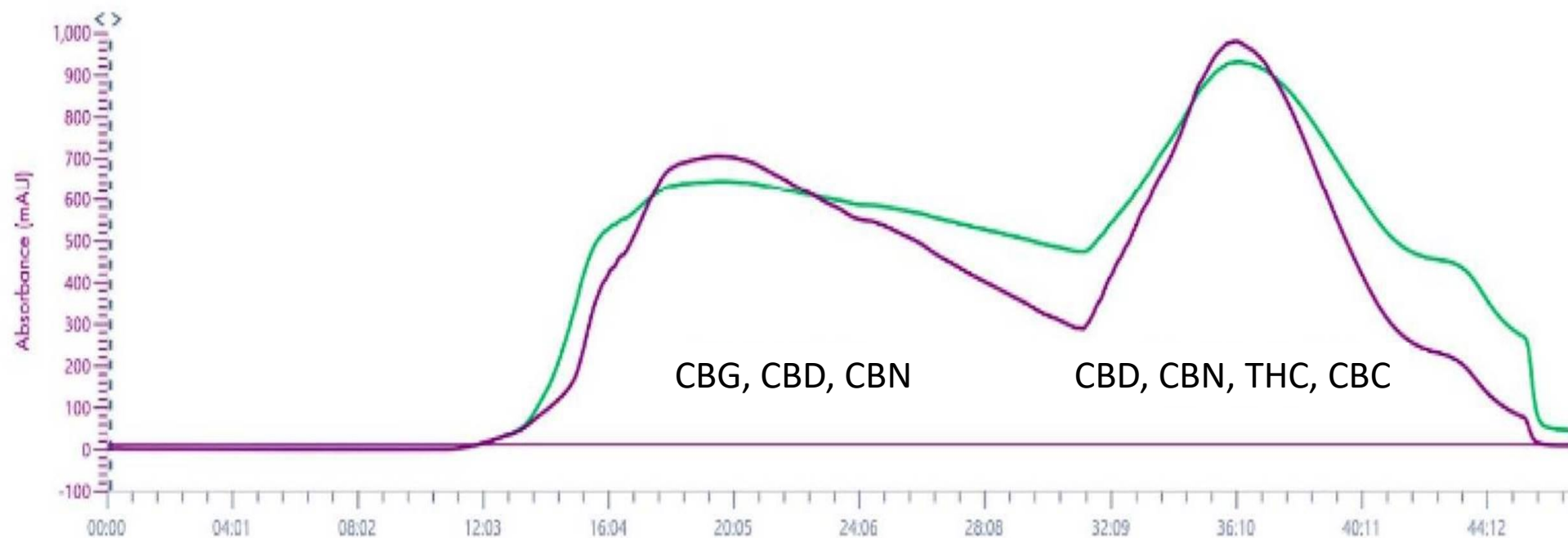
## Remove Pesticides in 20 minutes

Sample: CO<sub>2</sub> Extract , Sample Load: 400 g  
Purification Result: 81.84% Total Cannabinoid, Yield of Fraction 1: 318 grams, (3:50 - 12 Minutes)

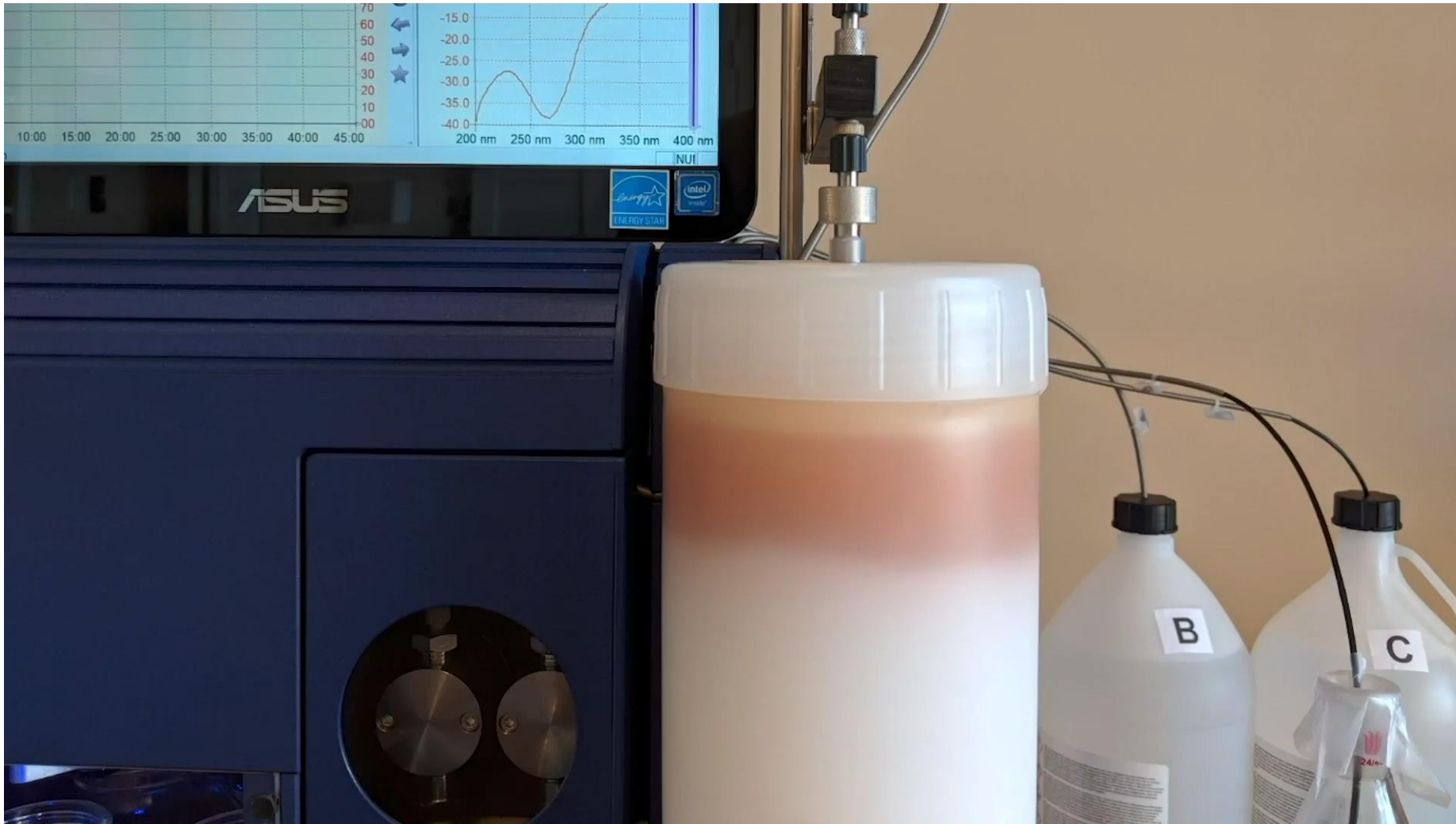




- Fast processing
- Easy to use
- Turnkey system
- Detailed SOP



Hemp distillate is remediated in less than 50 minutes



For the full video: [http://www.interchiminc.com/hemp/Interchim\\_v13.mp4](http://www.interchiminc.com/hemp/Interchim_v13.mp4)

Model	PF-520/535XL	PF-5015
T-Free Output	1-4 kg	12 kg

Output: 24 hours/day

- High Value
- Difficult to Obtain

	Price per Kg
CBD Oil	\$550
$\Delta$ 9-THC Oil	\$2,500
$\Delta$ 8-THC Oil	\$1,500
CBG Oil	\$2,000
CBC Oil	\$9,000
THCV Oil	\$30,000

Source: Kush.com,  
[www.greenentrepreneur.com/article/339828](http://www.greenentrepreneur.com/article/339828)



THC-FREE DISTILLATE - HIGH-QUAL...  
20 MINUTES AGO



25+KG GOLD DELTA 8 HEMP EXTRA...  
3 DAYS AGO

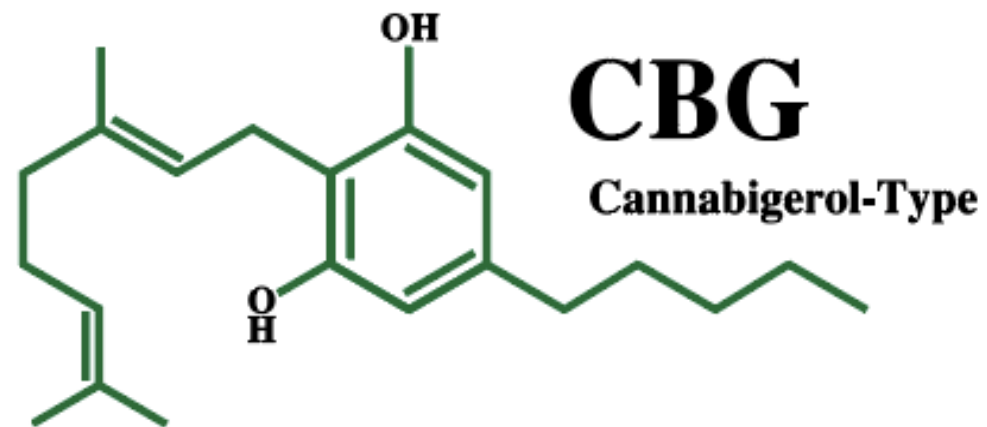
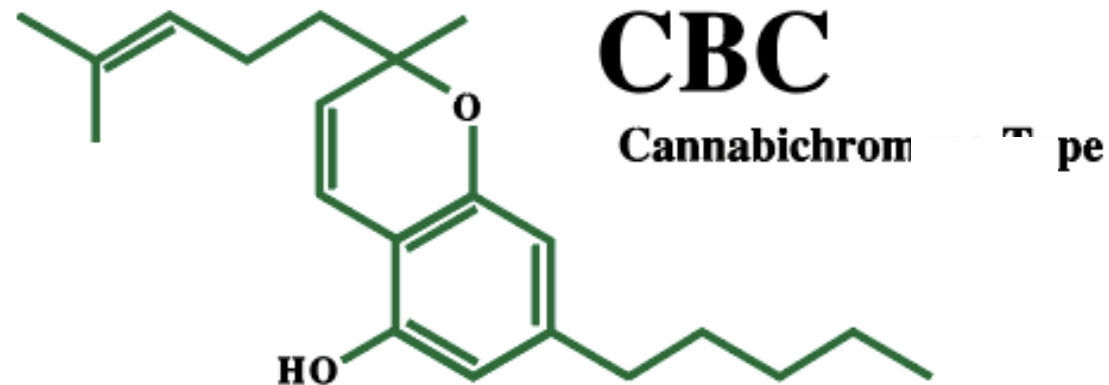


CBG DISTILLATE - PREMIUM PROD...  
20 MINUTES AGO

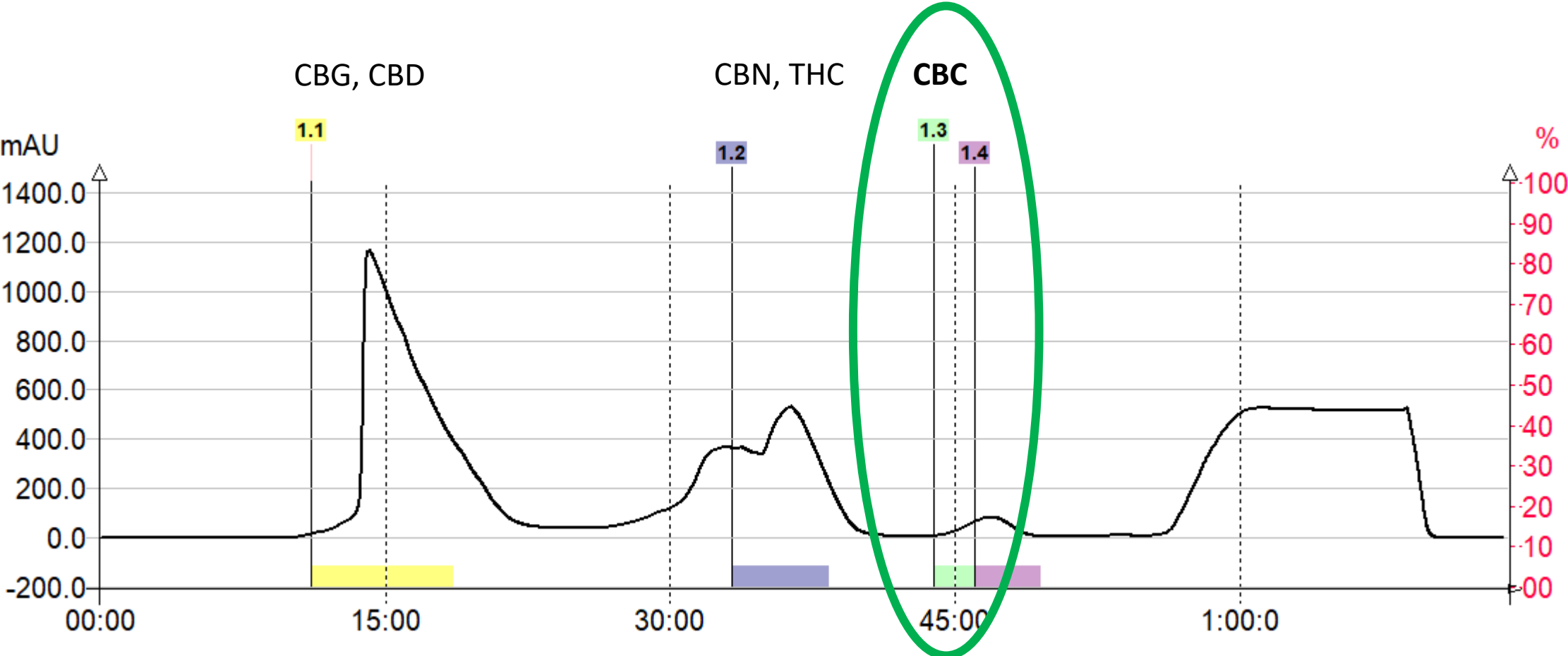


Sale! CBC Isolate \$9,950/kg Bulk -  
cGMP, 98.9%

THCV,  $\Delta^8$ -THC, CBC, CBG, CBN  
and more to follow



## CBC Purification

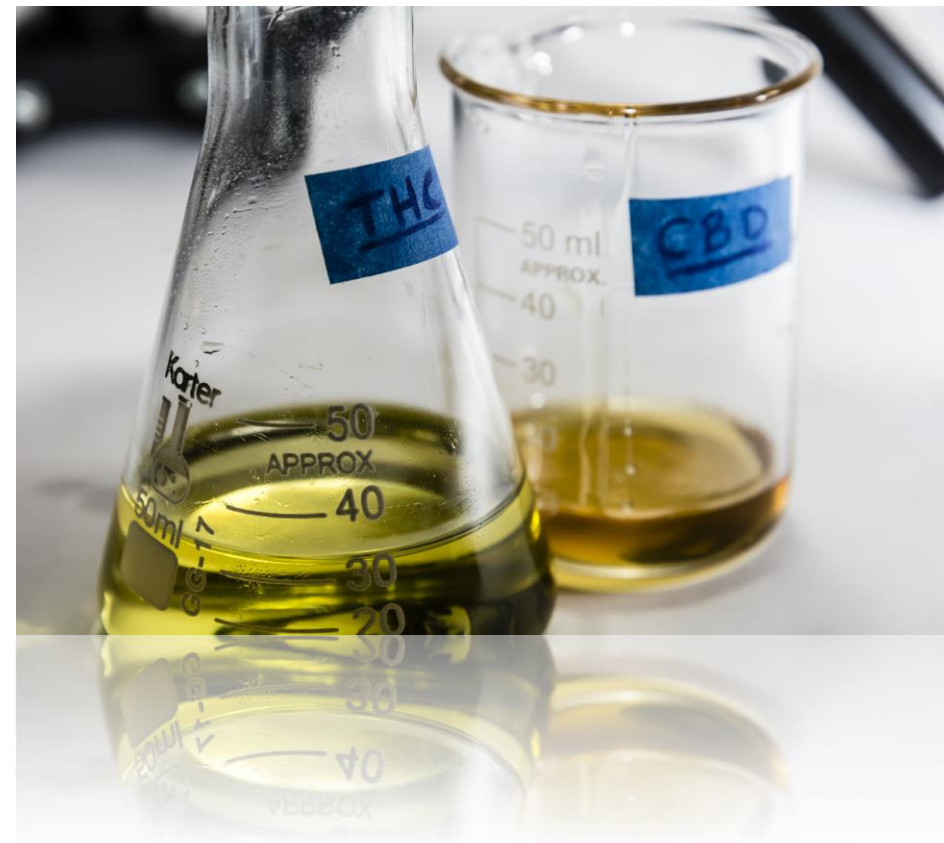


Courtesy of: AMS Solutions. Ashland, Oregon [www.amssolutions.tech](http://www.amssolutions.tech)

In-House Analytical with HPLC

High Performance Liquid Chromatography

- **Save Time**
- **Maximize Profit**
- **Build Customer Confidence**

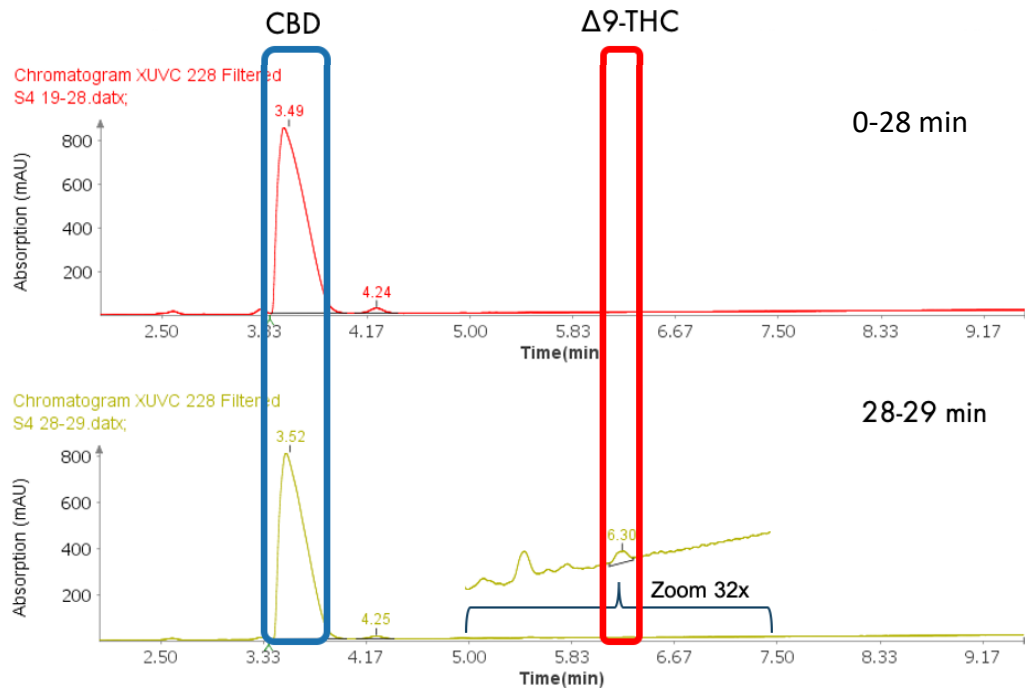


## Process Monitoring for Yield and Purity





## Testing fractions for THC content



- THC is not detected in the fraction from 0-28 minutes
- THC is detected in the fraction from 28-29 minutes



- ITM535 Pilot Scale

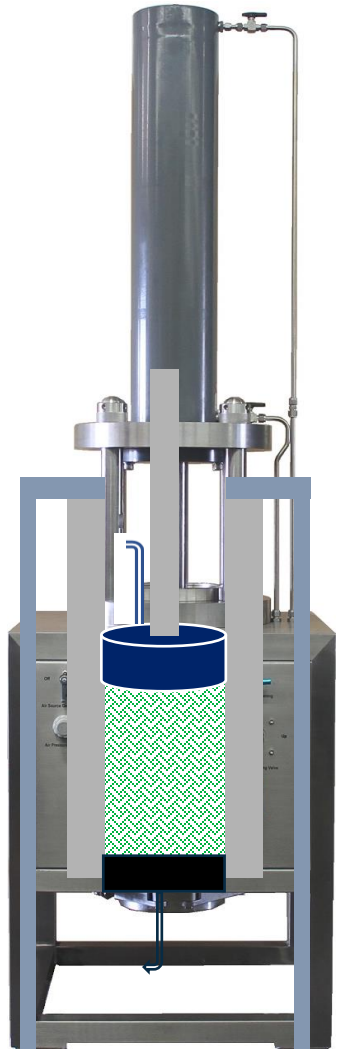


- ITM5015 Process Scale

## ITM5015 High Throughput Process Scale

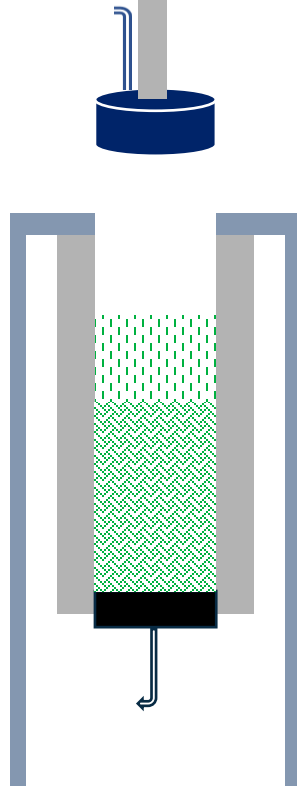
- Through pump injection for continuous processing
- 20 cm ID repackable columns
- Simple interface
- THC/Pesticide remediation





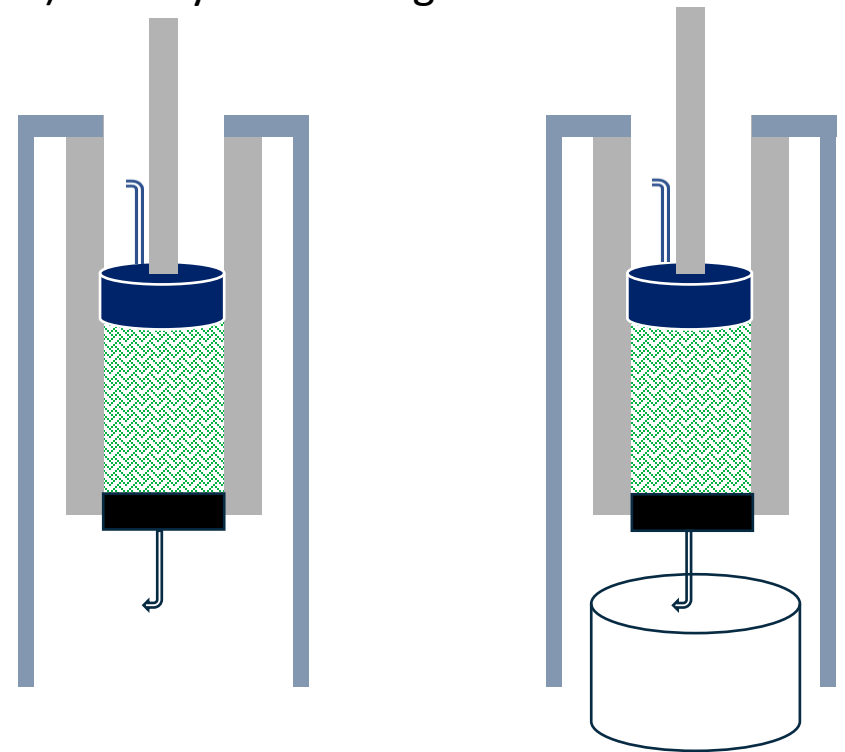
## Column Packing

- 1) Add Slurry
- 2) Compress the Bed



## Column Repacking

- 1) Remove Bottom Flange
- 2) Expel Media
- 3) Retract Piston
- 4) Secure Bottom Flange
- 5) Ready for Packing



## ITM535 system for **minor cannabinoid purification**

- Higher pressure for smaller particle size
- Through pump injection for continuous processing
- Scale up to a 15 cm ID repackable column
- Dewaxing, Pesticide and THC remediation

ITM535



- Columns
- Media



- ▶ High throughput potency testing with the AVANT (U)HPLC
- ▶ Heavy metal detection with the SOLATION ICP-MS



## FFE (Falling Film Evaporator) and Rectification





- ▶ Natural Products
- ▶ Drug Discovery
- ▶ Food & Ingredients
- ▶ Academia & Research
- ▶ Life Sciences, Diagnostics & Screening
- ▶ Flavors & Fragrances



# Thank You! Questions?

