HEMP Analysis for THC

Robert Hunsberger
Chemist III
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Hemp Analysis: THC

- **Analytical Chemistry:**
  - Extraction
  - Separation (Chromatography)
  - Identification (uV Absorption)

  - Cannabinoids in Hemp are analyzed by HPLC-PDA (High Performance Liquid Chromatograph-Photo Diode Array).

Hemp Analysis: THC

- **Extraction**
  - The Cannabinoids

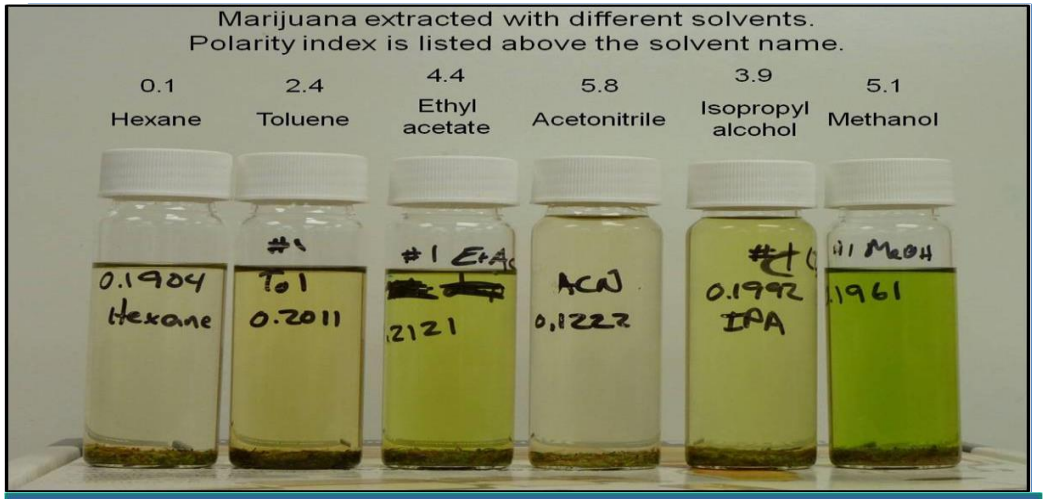
  Are soluble in Organic solvents (Along with many other Molecules).

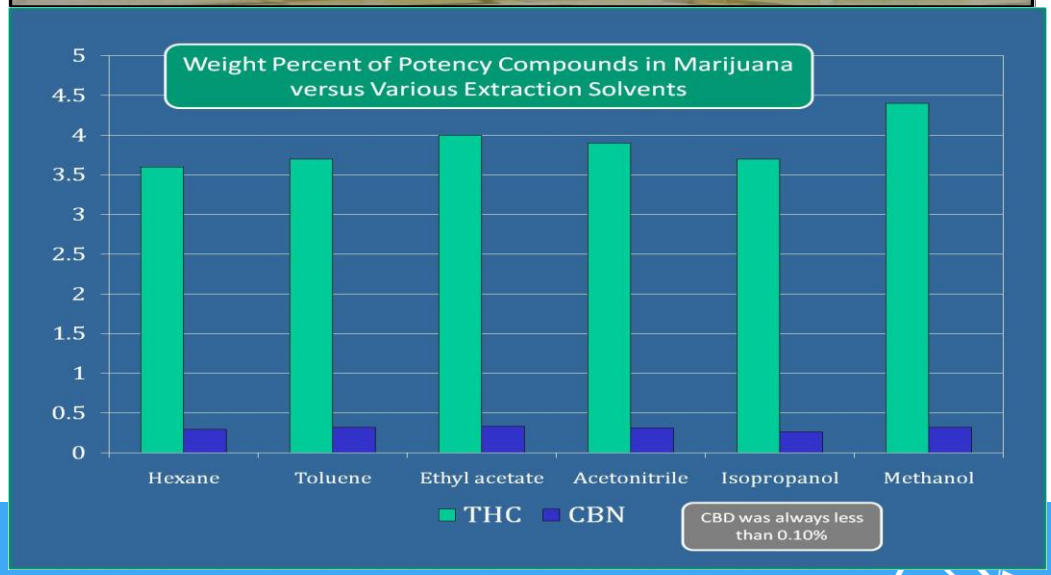
  - Dry sample
  - Grind sample.

  Weigh 0.15g sample

  Add 15ml of Methanol

  Sonicate 20 minutes.

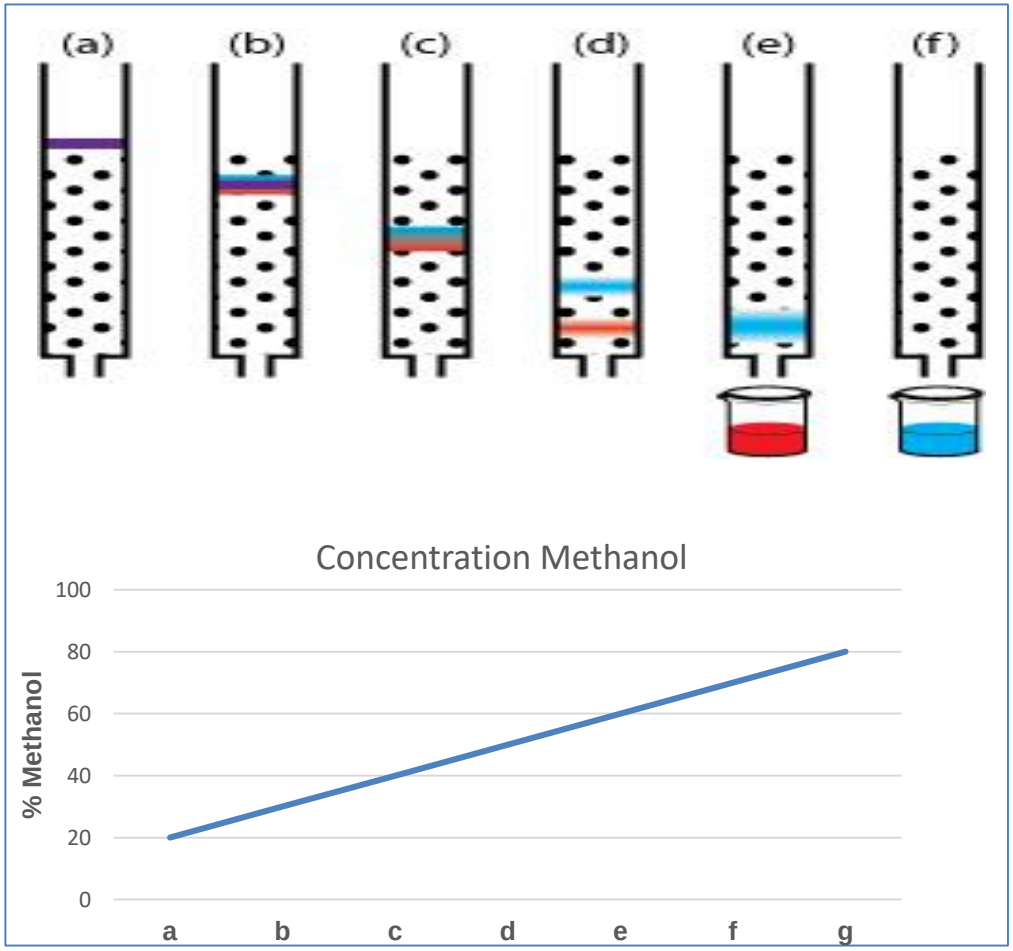




Hemp Analysis: THC

- **Separation**
  - Run a gradient of H2O : Methanol through a column.

  Compounds, including Cannabinoids, separate based on polarity.



Hemp Analysis: THC

- **Separation**

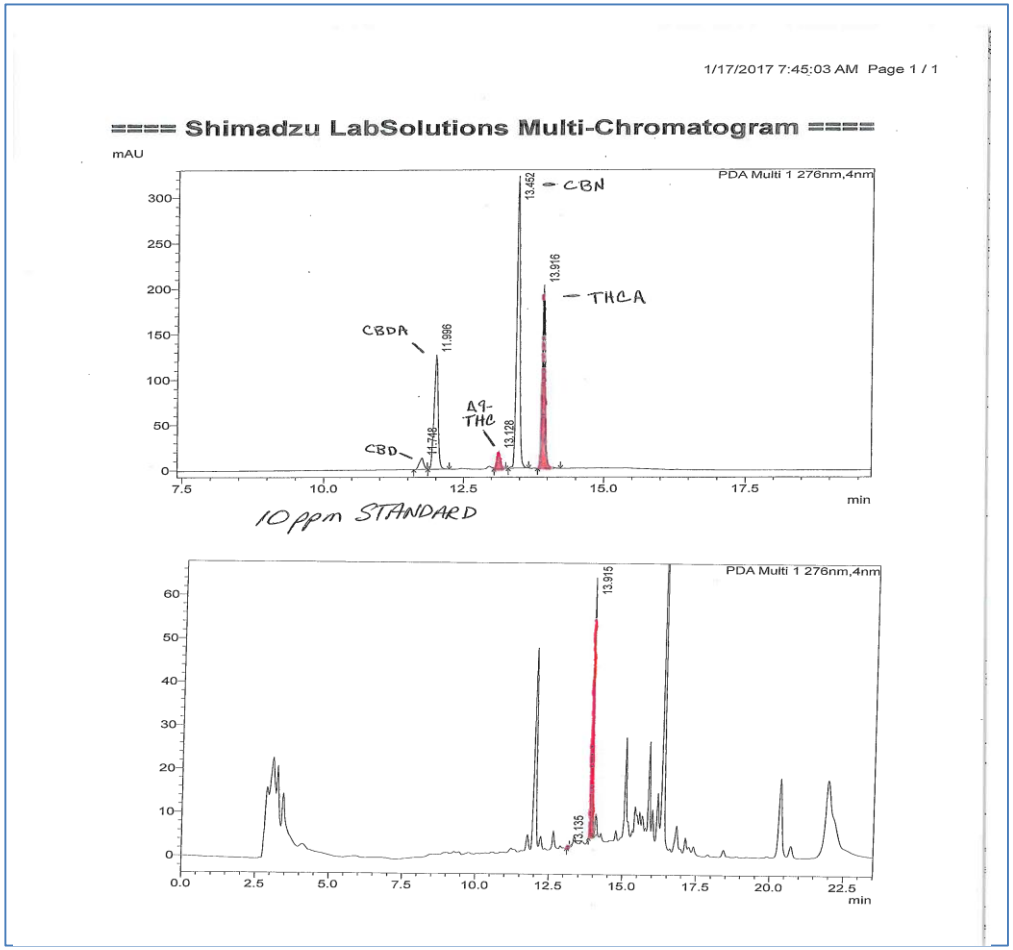
  Top Chromatogram

  10ppm Standard of 5 Cannabinoids. d9-THC and THC-Acid in red.

  Bottom:

  Sample of "Canda" Hemp. THC-A in red.

  No Detectable d9-THC

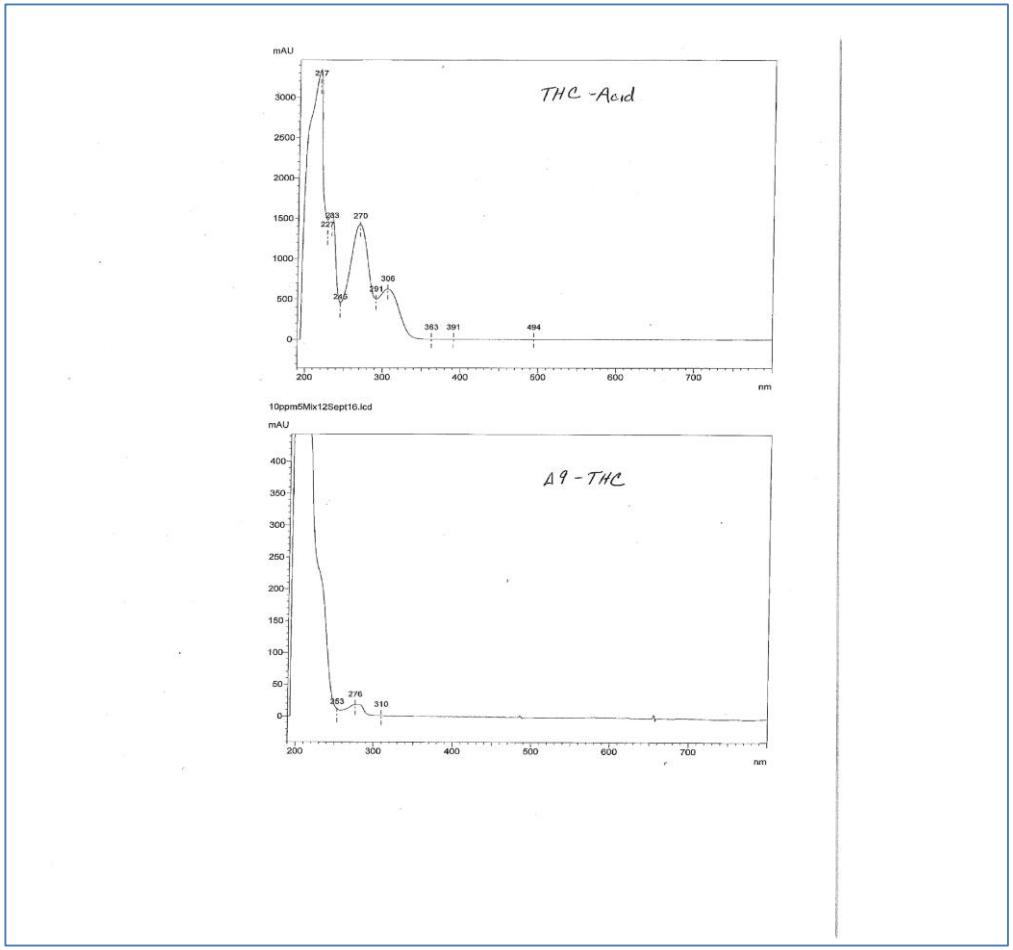


Hemp Analysis: THC

- **Identification**

  Separated peaks flow through the Photo Diode Array detector, collecting wavelengths in the ultraviolet range.

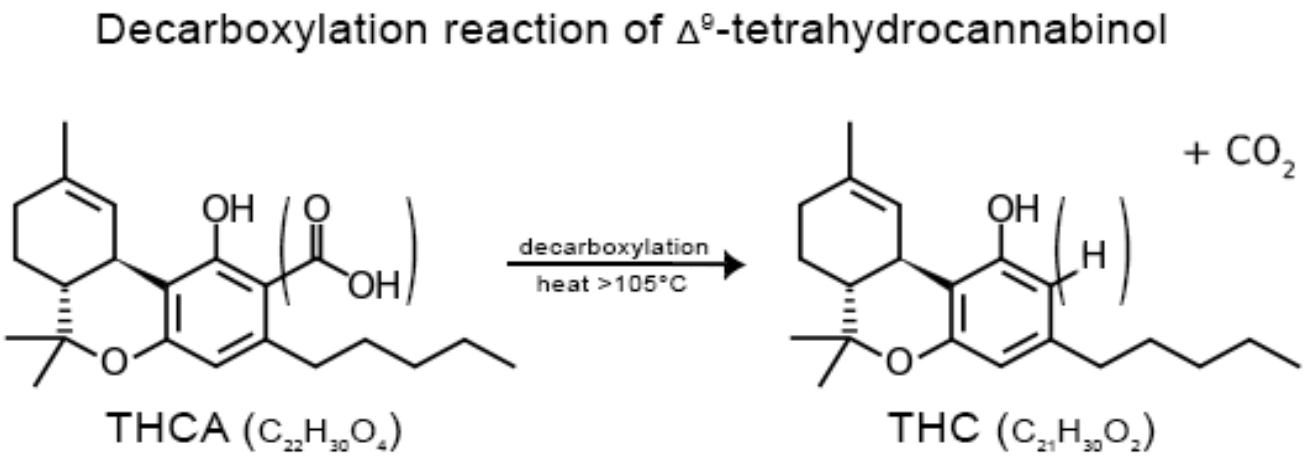
  Compounds are Identified via absorbance spectra and Retention Time.



Hemp Analysis: THC

- **Total THC = d9THC + THC-Acid(0.877)**

  Where does 0.877 come from?



Hemp Analysis: THC

- **Total THC = d9THC + THC-Acid(0.877)**

  Where does 0.877 come from?

  Molecular Wt d9THC = 314.22
  Molecular Wt THC-Acid = 358.47
  (Molec. Wt. CO_2 = 44)

  314.22/358.47 = 0.877

Hemp Analysis: Current Report Format

STATE OF NEVADA
DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
SPARKS, NEVADA

Hemp Analysis Data Report

Sample Date: Sampled By: **Russel Wilhelm** Date of Analysis:
Producer Name:
Following is the result of analysis for Hemp Samples received by the NDA Pesticide Laboratory for analysis of Cannabinoids. SAMPLE ID:

I. Method of Analysis : HPLC-PDA

Analyte	%
THC-ACID	0.657
delta-9 THC	ND
CBD	0.484
CBD-ACID	5.000
Potential Total THC (calculated)	0.576

Comments: ND=None Detected Less than 0.01% D9-THC and CBD

Analyst:	ADDRESS OF OFFICE **Nevada Department of Agriculture** **405 S. 21st Street** **Sparks, Nevada 89431**
Date	**Phone: (775) 353-3778**

NDA
Nevada Department of Agriculture

Hemp Analysis: Varieties of 2017

Strain ID	d-9 THC	THC-Acid	CBD	CBD-Acid
BH	0.00	0.18	0.00	2.05
BH	0.00	0.09	0.00	2.14
CW	0.00	0.44	0.65	10.12
CW	0.00	0.25	0.40	6.31
CW	0.00	0.38	0.50	8.68
CW	0.00	0.34	0.53	7.84
CW	0.00	0.40	0.45	8.30
CW	0.00	0.44	0.66	9.54
CW	0.00	0.31	0.48	7.50
CW	0.00	0.66	0.48	13.30
CW	0.00	0.38	0.00	8.22
CW	0.00	0.69	0.24	14.23
Fedora	0.00	0.09	0.00	2.06
Fedora	0.00	0.10	0.70	2.29
Felina	0.00	0.05	0.00	1.24
Futura	0.00	0.05	0.00	1.19
Golden Valley	0.00	0.09	0.12	2.06
Thai Stick	0.00	0.16	0.00	0.66
Ultra	0.05	0.48	0.24	2.65
Ultra	0.00	0.48	0.37	3.12

Current Varieties in Nevada

- X59
- Cherry Wine
- Ultra
- Boring Hemp #2
- Boring Hemp #3
- Golden Valley
- Thai Stick
- Futura 75
- Felina 32
- Fedora 17

Hemp Analysis: THC

- **Thanks to Sharryn Cohen and Dr. Jian Zhang**
- **Any Questions?**
- **Thank you for your time!**