Analysis of Cannabinoids in Natural and Synthetic Samples

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Abstract

Recently, there has been an increased focus on the analysis of natural and synthetic cannabinoids. Several classes of cannabinoids exist, each with different chemical and pharmacological effects. The amount of each cannabinoid present varies with each strain of *Cannabis*, thus making accurate qualitative and quantitative is very important. Several commercial samples were analyzed by HPLC and GC for qualitative purposes.

Introduction

- Industrial hemp is a relatively new and rapidly expanding field.
- Production and sales of isolate and distillate requires potency analysis and some required qualitative analysis.
  - Production of Δ9-THC free distillates and isolates
- Synthetic cannabinoids involves series of reactions to convert starting material to a desired material
  - Ex: Conversion of CBDV to CBD

Purpose

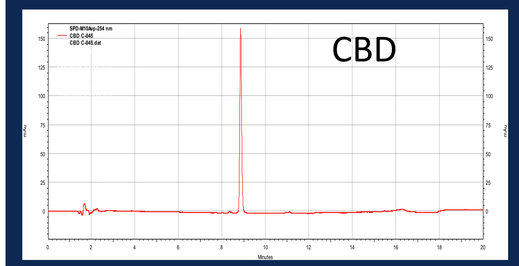
- Analyze synthetic CBD sample from Mile High Labs
  - Possible trace amounts of other cannabinoids

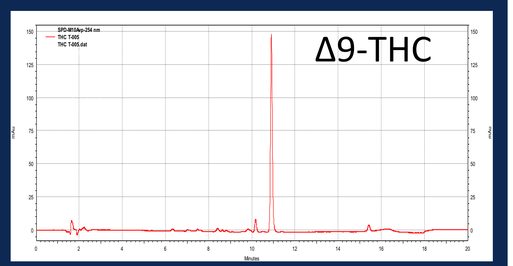
Methods

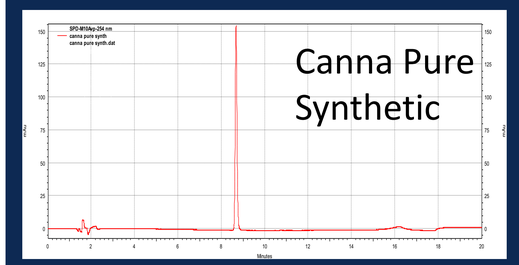
Column:	Luna Omega 5 µm Polar C18 100 LC 150×4.6 mm
Mobile Phase A:	20 mM Ammonium Formate pH=3.2
Mobile Phase B:	HPLC-grade acetonitrile
Method Type:	Gradient
Flow Rate:	1.2 mL/min

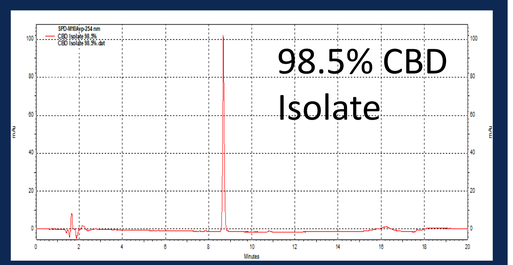
Time=	Mobile Phase A	Mobile Phase B
0 min	40%	60%
9 min	5%	95%
12 min	5%	95%
16 min	40%	60%
20 min	40%	60%

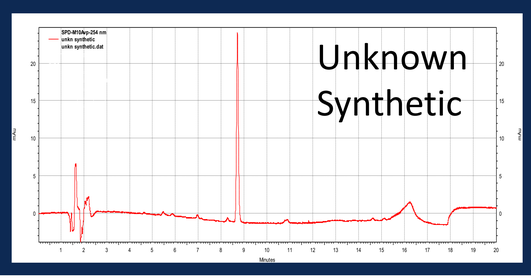
Results











Conclusion

- The samples Canna Pure Synthetic CBD and 98.5% CBD Isolate were shown to be the most pure samples of CBD.
  - Δ9-THC detection
- The unknown synthetic sample contained the largest amounts of other minor cannabinoids
  - CBDV, Δ9-THC, and other unknown compound detection
- Some of the cannabinoid standard solutions also had low detection levels of various cannabinoids.
  - Unknown origin
- GC results confirmed HPLC analysis

Discussion

- Even though there were minor contaminants of Δ9-THC, the isolate and synthetics could still be considered THC free.
  - <0.3% THC
- Quantification is required.

References

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