

series	cap color	membrane	pore size	part #
eXtremelFV®	●	PVDF	0.2µm	85531

THC analysis in candy using the eXtremelFV® for sample prep

Introduction

What are the challenges faced by analytical labs working with edibles? Measuring the chemical contents and accurately labelling edible products has been a challenge to the cannabis industry. A recent study published by the Journal of the American Medical Society (JAMA) regarding cannabinoid mislabeling in edible medical cannabis products, Dr. Ryan Vandrey of Johns Hopkins School of Medicine looked at 75 products from 47 separate brands purchased at medical dispensaries. Items included baked goods, beverages, and chocolate/candy. Their criteria for selection included those items with a specifically-stated cannabinoid content level. The results, indicated only 17% of edibles tested were “accurately” labeled. The results indicated a +/- 10% range of the stated THC content for beverages and baked goods while baked goods were off by +/- 25%. This could lead to over and under usage which could represent a safety concern. We looked at streamlining the sample prep and analysis of THC in candy.

Equipment

HPLC:	Shimadzu Prominence
UV/VIS:	228nm
Column:	Raptor ARC-18, 150 mm x 4.6 mm ID
Column Temperature:	30 °C
Flow Rate:	1.0mL/min
Mobile Phase:	
	A: 25%: Water, 5 mM ammonium formate, 0.1% Formic Acid
	B: 75%: Acetonitrile, 0.1% Formic Acid

Sample Preparation

A. Chocolate

1. 2 g of cold chocolate was weighed into a 50 mL centrifuge tube.
2. Bring up to a total volume of 40 mL with cold IPA.
3. Sonicate at 40 °C for 5 minutes followed by gentle mixing by hand.
4. Allow the lipids to precipitate. If necessary, store in a -20 °C freezer for 30 minutes.
5. Vortex briefly.
6. Centrifuge at 3000 rpm for 5 minutes.
7. Transfer the supernatant to a 20mL a graduated cylinder and diluted 10-fold in 25:75 Water:Methanol Vortex briefly.
8. Filter using an eXtremelFV®, 0.2µm PVDF.

B. Hard Candy

1. 1g of ground hard candy was weighed into a 50mL centrifuge tube.
2. Add 5mL of HPLC grade water.
3. Vortex until the candy is completely dissolved.
4. Bring up to a total volume of 40 mL with cold IPA.
5. Vortex for 30 seconds.
6. Centrifuge at 3000rpm for 5 minutes. Transfer the supernatant to a 20mL a graduated cylinder and diluted 10-fold in 25:75 Water:Methanol Vortex briefly.

7. Filter using an eXtremelFV®, 0.2µm PVDF.

Results

Nicely resolved THC peak allows for the simple quantification of THC in chocolate, Fig 1 and hard candy, Fig 2.

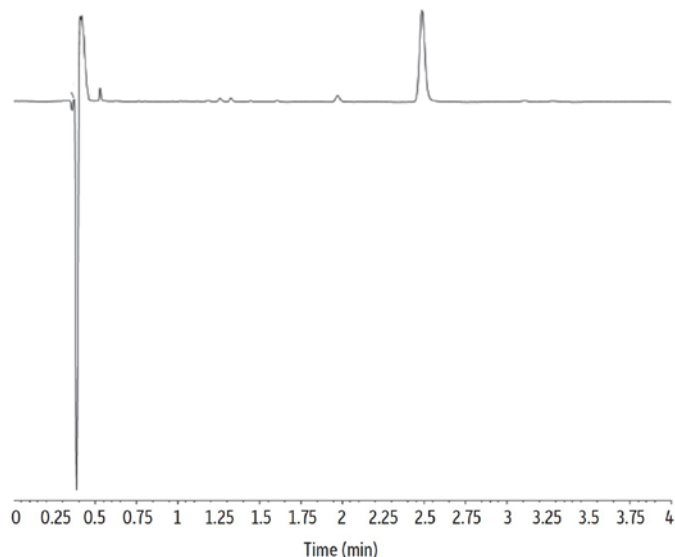


Fig 1. THC peak in chocolate, 2.49 minutes Δ9-Tetrahydrocannabinol (Δ9-THC)

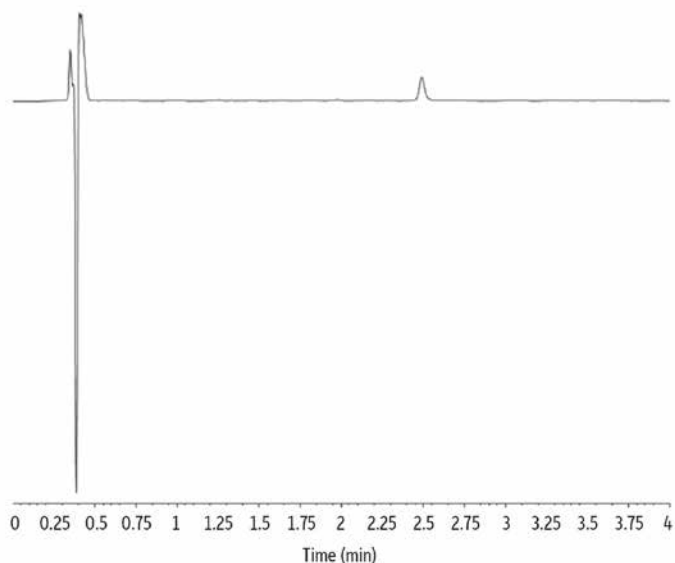


Fig 2. THC peak in hard candy, 2.49 minutes Δ9-Tetrahydrocannabinol (Δ9-THC)

Conclusion

Accurate THC analysis is possible using a streamlined approach to sample prep. Sample prep and analysis for the chocolate utilizing cold organic solvent for complete crash of the lipids and final clean-up using the eXtremelFV® is < 1 hour per sample. Sample prep and analysis for the hard crushed candy and final clean-up using the eXtremelFV® is < 20 minutes per sample. 🔄

Thomson Instrument Company is not affiliated with Shimadzu or its products. Restek or its products are not affiliated with Thomson Instrument Company.