

## FIVE CANNABINOIDS SEPARATED AND DETECTED IN NINE MINUTES USING THE AXCEND FOCUS LC<sup>®</sup>

### OVERVIEW

Five cannabinoids\* were separated and detected in ~nine minutes using the Axcend Focus LC<sup>®</sup> High-Performance Liquid Chromatography system (HPLC): Cannabidiolic Acid, Cannabidiol, Cannabinol, Delta(9)-Tetrahydrocannabinol, and Delta(9)-Tetrahydrocannabinolic Acid. Due to its small size, low-weight, hand-portability, and lower solvent usage, the Axcend Focus LC is uniquely suited for field and laboratory analysis of cannabinoid compounds.

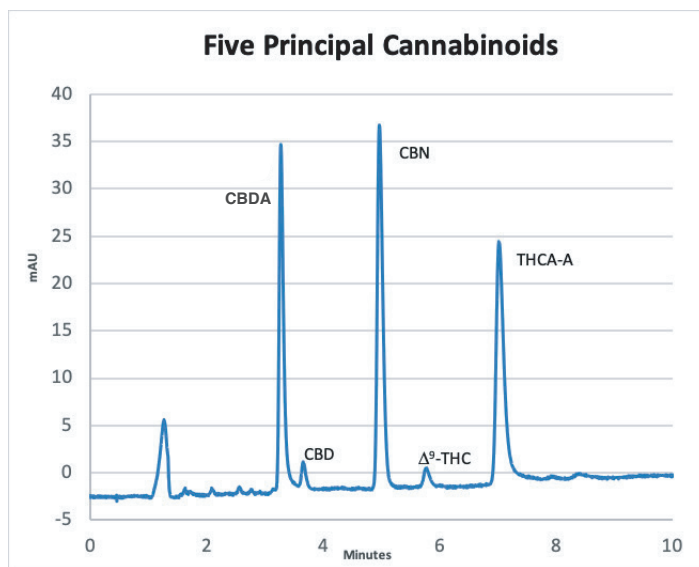
### INTRODUCTION

United States cultivation, harvesting, processing, marketing and sales of "Industrial Hemp" has been legal since December 20, 2018. In addition, increased acceptance and legalization of medicinal and recreational marijuana in many U.S. states (as well as abroad), has created a significant and growing demand for lab and field cannabinoid analysis.

An Axcend Focus LC was used in this experiment: a shoebox-sized, lightweight (17.25 lbs / 7.8 kg), and hand-portable HPLC ideal for cannabinoid detection and analysis in field and lab settings. In addition, as a nano-flow capillary HPLC, the Axcend Focus LC consumes approximately 1/500th of the solvents of traditional HPLCs, dramatically reducing the Total Cost of Ownership (TCO) per instrument.

### KEY POINTS

This brief application note demonstrates the ability of the Axcend Focus LC to detect and separate five principal cannabinoids – Cannabidiolic Acid (CBDA), Cannabidiol (CBD), Cannabinol (CBN), Delta(9)-Tetrahydrocannabinol ( $\Delta^9$ -THC); and Delta(9)-Tetrahydrocannabinolic acid A (THCA-A) – at 100 ppm in ~nine minutes with a 50:50 water:methanol injection standard. UV detection occurred at 255 nm\*\* on a 10 cm, 150  $\mu$ m internal diameter nano-flow capillary column packed with 1.8  $\mu$ m C18.



UV detection of five cannabinoids at 255 nm using the Axcend Focus LC. Elution Order – 3.3 min: CBDA; 3.6 min: CBD; 5 min: CBN; 5.8 min:  $\Delta^9$ -THC; and 7 min: THCA-A. Flow rate: 3  $\mu$ L/min; Gradient: 65% - 85% B, 10 min; Equilibration Time: 2 min; Mobile Phase A (3:97:0.1 acetonitrile [ACN]:water [H<sub>2</sub>O]:trifluoroacetic acid [TFA]); Mobile Phase B (97:3:0.1 ACN:H<sub>2</sub>O:TFA); Column: 10 cm x 150  $\mu$ m i.d.; 1.8  $\mu$ m C18.

## TARGET CANNABINOIDS

- CBDA: Cannabidiolic Acid
- CBD: Cannabidiol
- CBN: Cannabinol
- $\Delta$ 9-THC: Delta(9)-Tetrahydrocannabinol
- Injection Volume: 40 nL
- HCA-A: Delta(9)-Tetrahydrocannabinolic acid A

## RUN CONDITIONS

- Detection: UV at 255 nm
- Column Length: 10 cm
- Internal Diameter: 150  $\mu$ m
- Packing: 1.8  $\mu$ m C18
- Injection Volume: 40 nL
- Flow Rate: 3  $\mu$ L/min

## SUMMARY

Five primary cannabinoids were separated and detected using the Axcend Focus LC. In addition, with only 36  $\mu$ L of solvents consumed during this analysis, the Axcend Focus LC offers a significant reduction in the Total Cost of Ownership for organizations conducting cannabinoid testing using HPLCs.



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\* – Cannabinoid samples provided by Restek Corporation.

\*\* – Axcend Focus LC UV detection is also available from Axcend® at 235 and 275 nm.

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