

Fast and Efficient Separation of Ten Naturally Occurring Cannabinoids by Supercritical Fluid Chromatography (SFC) using Lux[®] 5µm Cellulose-2 Column

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Overview

Chromatography is a great separation technique that can be effectively used for the analysis and purification of cannabinoids derivatives. For both food safety and for legal purposes, cannabinoids content in various food and consumable products is an emerging concern.

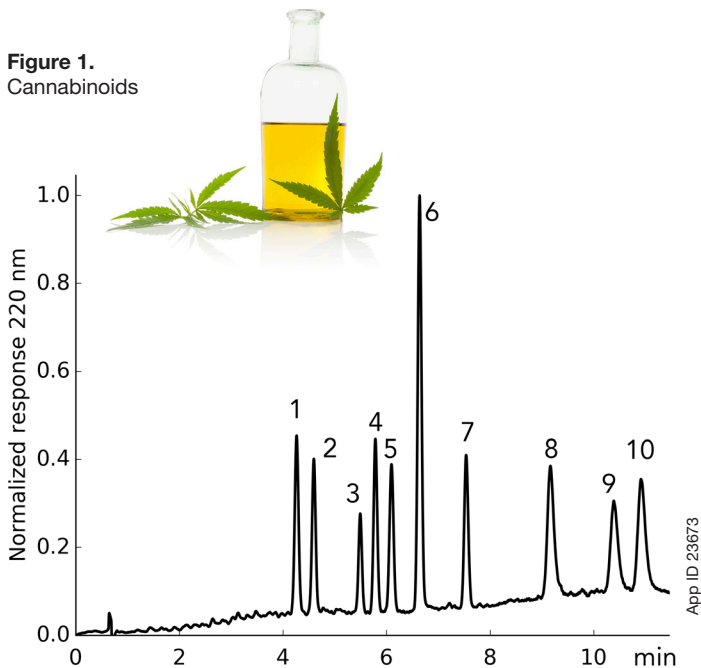
Highlighted in this application is a fast separation of 10 naturally occurring cannabinoids in less than 12 min under SFC conditions. The 10 standards are baseline resolved and the cannabinoids containing the acid functionality such as CBDA, THCA, and CBGA elute last.

The chromatographic conditions described in this application use ethanol as an organic modifier and the conditions can be scaled-up to preparative scale. Lux Cellulose-2 chiral stationary phase is stable under SFC conditions and is available in 10 or 20µm particle sizes as well as in bulk to pack large diameter columns (>5cm).

Acknowledgement

We would like to provide special thanks to Ebbu, LLC for their contributions.

Figure 1.
Cannabinoids



Conditions

Column: Lux 5 µm Cellulose-2

Dimensions: 250 x 4.6 mm

Part No.: 00G-4457-E0

Mobile Phase: A: Carbon Dioxide

B: Ethanol

Gradient:	Time (min)	% B
	0	1.5
	2.8	4
	9.7	17
	10.6	17
	10.9	1.5
	11.5	1.5

Injection: 2 µL

Flow Rate: 6 mL/min

Temperature: Ambient, 25°C

Backpressure Regulator: 120 Bar

Detection: UV @ 220 nm

- Sample:**
1. Cannabidiol (CBD)
 2. Cannabidiol (CBD)
 3. Cannabichromene (CBC)
 4. Tetrahydrocannabivarin (THCV)
 5. Tetrahydrocannabinol (THC)
 6. Cannabinol (CBN)
 7. Cannabigerol (CBG)
 8. Cannabidiolic acid (CBDA)
 9. Tetrahydrocannabinolic Acid (THCA)
 10. Cannabigerol (CBGA)

See reverse for analyte structures

Note: 100 µg/mL mix of 10 cannabinoid standards obtained from Restek[®] and Cayman Chemicals[®]

Instrument: JASCO[®] 4000 analytical SFC (CO₂ pump PU-4350, Co-solvent PU-4380, PDA MD-4010, BPR BP-4340 AS AS-4350)



APPLICATION

Lux Ordering Information

3 μ m Minibore, MidBore™, and Analytical Columns (mm)								SecurityGuard™ Cartridges (mm)	
Phases	50 x 2.0	150 x 2.0	150 x 3.0	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 2.0*	4 x 3.0*
Cellulose-2	00B-4456-B0	00F-4456-B0	00F-4456-Y0	00B-4456-E0	00D-4456-E0	00F-4456-E0	00G-4456-E0	AJ0-8398 /10pk	AJ0-8366 /10pk
								for ID:	2.0–3.0 mm 3.2–8.0 mm

5 μ m Minibore and Analytical Columns (mm)						SecurityGuard™ Cartridges (mm)	
Phases	50 x 2.0	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 2.0*	4 x 3.0*
Cellulose-2	00B-4457-B0	00B-4457-E0	00D-4457-E0	00F-4457-E0	00G-4457-E0	AJ0-8398 /10pk	AJ0-8366 /10pk
						for ID:	2.0–3.0 mm 3.2–8.0 mm

*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJO-4282

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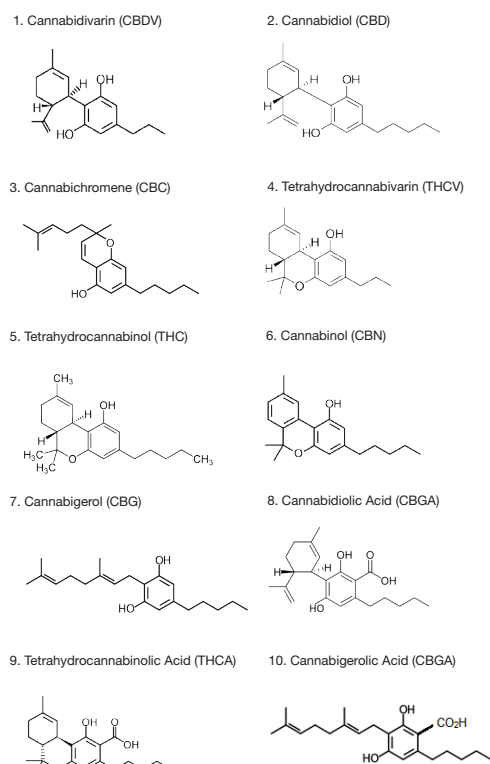
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Table 1.
Cannabinoids Chemical Structures



If Lux analytical columns (\leq to 4.6 mm ID) do not provide at least an equivalent or better chiral separation as compared to a competing column of the same particle size, similar phase and dimensions, return the column with comparative data within 45 days for a FULL REFUND.

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SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362
CAUTION: this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP or Ultra holders, or to any cartridges.

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