Application Note

Cannabinoid Metabolites

Introduction

Cannabinoid analysis has become a new hot topic due to the legalisation of Cannabanoids for both medicinal and recreational use in many states. Whilst there are over 100 cannabinoids know only a few are well researched and known to have a positive effect on the human body. THC is the most well known due to its psychoactive effect on the body, whilst most health benefits are associated with CBD. Anti-inflammatory, anxiety, arthritis and potentially anti-cancer are just some of the benefits people use this medication for. In this application note we look at the analysis of cannabanoids by the use of HPLC with a fast analysis time and good resolution.
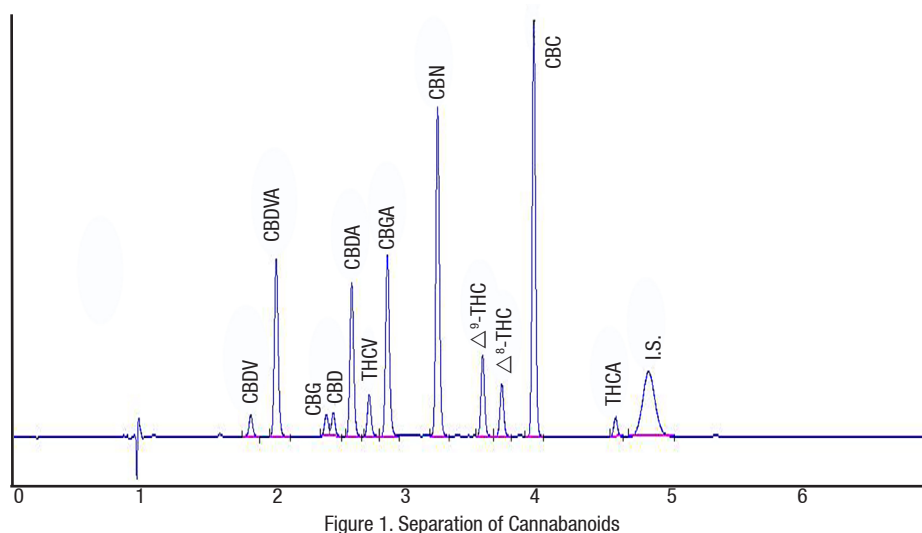

Figure 1. Separation of Cannabanoids

> "Cannabanoids are associated with a wide variety of health benefits from pain relief to cancer treatment"

Experimental Analysis

The use of a core-shell SpeedCore column allows for high sensitivity and high resolution separations to be achieved for the analysis of 13 common cannabanoids.

In a 5min run time many of the key cannabanoids can be analysed with high specificity on a C18 column. Sharp peak shapes lead to good sensitivity and resolution.

The method has been optimised to give the best separation of all 13 cannabanoids in a fast throughput time. The same column and a simple mobile phase can also be used for the analysis of the pesticides associated with the growth of cannabis plants. (See Fortis application note on Cannabanoid Pesticide analysis)

Initial Conditions

Column: 2.6μm SpeedCore® C18 150x4.6mm p/n SC18-050726

Mobile phase
A: Water + 0.1% formic acid
B: MeOH + 0.1% formic acid
82 - 95% B in 3min
Flow Rate: 1.5ml/min
Temp: 25°C
Detection: 284nm

Figure 2. Structure of THC

Compounds

1. (CBDV) Cannabidivarin
2. (CBDVA) Cannabidivarnic acid
3. (CBG) Cannabigerol
4. (CBD) Cannabidiol
5. (CBDA) Cannabidiolic acid
6. (THCV) Tetrahydrocannabivarin
7. (CBGA) Cannabigerolic acid
8. (CBN) Cannabinol
9. ($\triangle^9$-THC) Delta-9-tetrahydrocannabinol
10. ($\triangle^8$-THC) Delta-8-tetrahydrocannabinol
11. (CBC) Cannabichromene
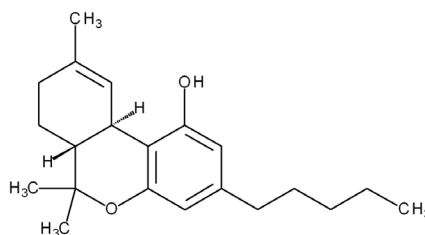12. (THCA) Tetrahydrocannabinolic acid
13. I.S.

Conclusion

In this application note we have shown the separation of 13 cannabanoids in a 5minute run time. Use of the latest SpeedCore column technology has allowed the fast, sensitive, selective resolution of the common cannabanoids commonly thought to hold medicinal benefit.

HPLC is known to be a robust, reproducible analysis technique, which is key to the accurate quantitation of compounds such as this which are scheduled controlled drugs under US federal law and therefore need to be tightly screened with accuracy paramount.

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