



Flavour Profiling in Cannabis

As a pharmaceutical drug, Cannabis should be rigorously tested to comply with stringent rules and regulations regarding quality and safety of the product. As there is currently no centralised regulatory body for Cannabis quality control, responsibility for testing falls to the dispenser, manufacturer and even the individual consumer - if they are growing their own for personal medical use.

As Cannabis is now effectively legalised at state level in the United States, but has remained illegal at Federal level, the usual routes for substance regulation cannot be applied. The Food and Drug Association (FDA) is normally at the forefront of ensuring consumer safety, but they are effectively restricted from completing effective drug trials, as the DEA official position means they cannot provide illegal substances for testing. The absence of this data means the FDA are unable to provide relevant regulations, resulting in the FDA declaring Cannabis as not safe for human consumption. However, Delta-THC, the main psychoactive ingredient in the L-Sativa plant has been an FDA approved drug for over 25 years. This has helped influence the general opinion that Cannabis itself should also be an FDA regulated substance.

Cannabis has an abundance of different strains with many different side effects. In order for medicinal Cannabis to be regulated and prescribed correctly to treat specific ailments, strain determination is essential.

Flavour profiling would be applicable for determining strain identity through levels of compounds responsible for distinctive tastes and smells e.g. Terpenes.



Image 1 - Example of Medicinal Marijuana

GC Conditions	
Injector Temperature	270°C
Detector Type	FID
Detector Temperature	280°C
Carrier Gas Type	Hydrogen
Stimulated Constant Flow	2.5 ml min ⁻¹
Split Flow	70 ml min ⁻¹
Column Type	EL-5 30 m x 0.25 mm x 0.25µm
Temperature Program	
Initial Temperature	100°C
Ramp 1	30°C min ⁻¹ to 200°C (hold 5 mins)

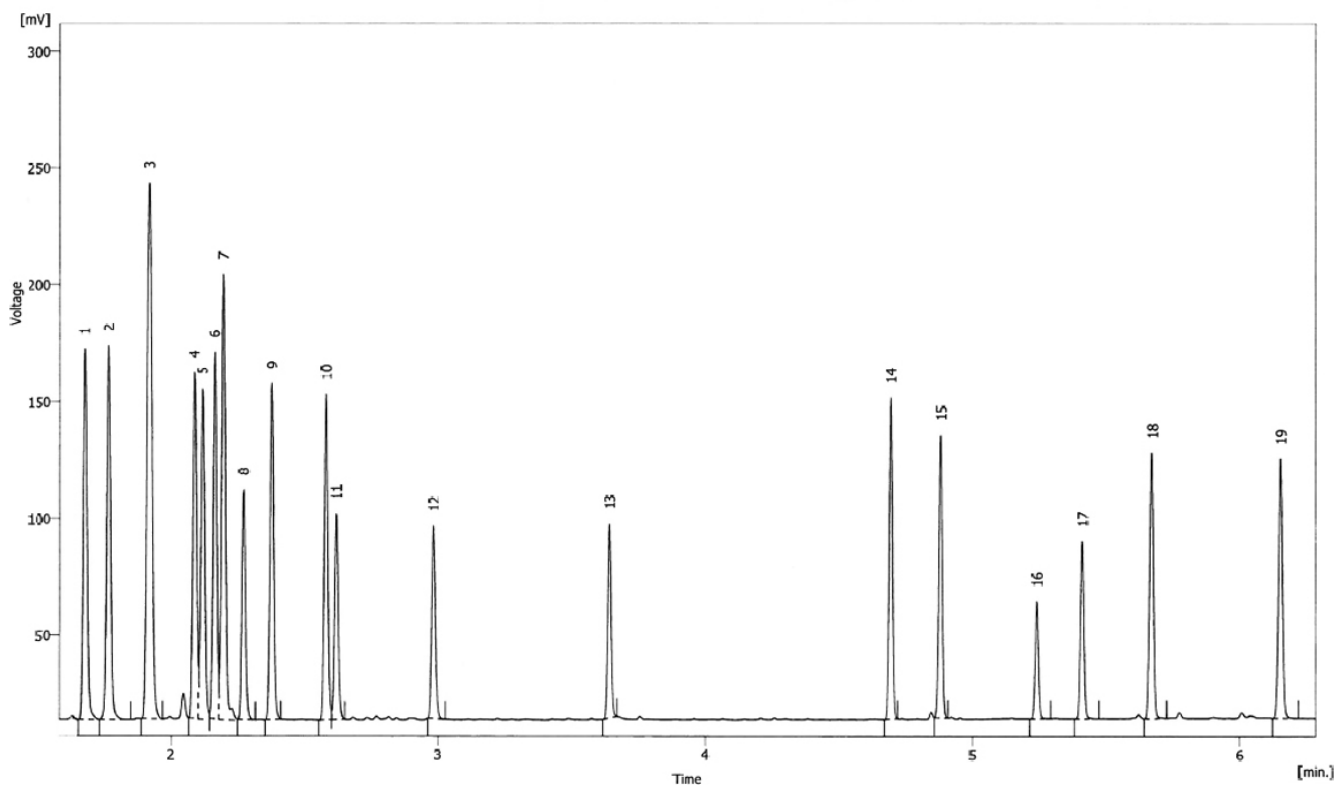


Figure 1 - A 1.0 μ L injection of a 625 ppm Terpene mix standard

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|----------------|-----------------|---------------------|
| 1. a-Pinene | 8. d-Limonene | 15. b-Caryophyllene |
| 2. Camphene | 9. Ocimene | 16. a-Humulene |
| 3. b-Pinene | 10. g-Terpinene | 17. Nerolidol |
| 4. b-Myrcene | 11. Terpinolene | 18. Guaiol |
| 5. d3-Carene | 12. Linalool | 19. a-Bisabool |
| 6. a-Terpinene | 13. iso-Pulegol | |
| 7. p-Cymene | 14. Geraniol | |

Flavour profiles in Cannabis were tested by using a readily available standard to show that the compounds can be clearly and easily detected when using an Ellutia 200 Series Gas Chromatograph.

A liquid sampling technique was used when testing for Terpenes. This is so that all molecules can be equally represented in the injected sample. Headspace would not be recommended for this task, due to larger molecules struggling to reach the gas phase. It is hard to find a headspace temperature where all molecules can be equally sampled when analysing Terpenes. The samples were placed in an EL3000A liquid autosampler. The 200 Gas Chromatograph with an FID (Flame Ionisation Detector) analysis conditions are shown above. The GC and Liquid Autosampler is a cost effective addition to any lab.

As shown in figure 1, all components normally found when testing for Terpenes were detected, and detected very clearly.

Equipment used Main Instruments

200 Series GC with FID

Part no. 20500130

Ellutia Manual Headspace

Part no. 30501001

Ellution Software

Part no. 23001001

Colibrick

Part no. 23001022

EL 5 30 m x 0.25 mm x 0.25 μ m column

Part no. 51100157

Liquid Autosampler

Ellutia EL3100A - Automatic Liquid Sampler - 15 position

Part no. 30500011

Ellutia EL3000A - Automatic Liquid Sampler - 121 position

Part no. 30500010

GC Mounting Kit for EL3100A/ EL3000A Autosampler

Part no. 30500018

Accessories

7000 Series Flowmeter

Part no. 21007000

5 μ l Syringe

Part no. 20511202

2ml Short-cap Screw Thread Vials

Part no. 20511101

Pre-assembled Short Blue Screw Vial Closures

Part no. 20511102

For more information on this application, equipment used or ordering, please visit: www.ellutia.com or email: info@ellutia.com.



UK Tel: +44 (0)1353 669916 Fax: +44 (0)1353 669917
USA Tel: +1 843 259 2307
Germany Tel: +49 (0)561 400 0430 Fax: +49 (0)561 400 0429
Email: info@ellutia.com Website: <http://www.ellutia.com>