



CANNABINOIDS & HEMP POTENCY

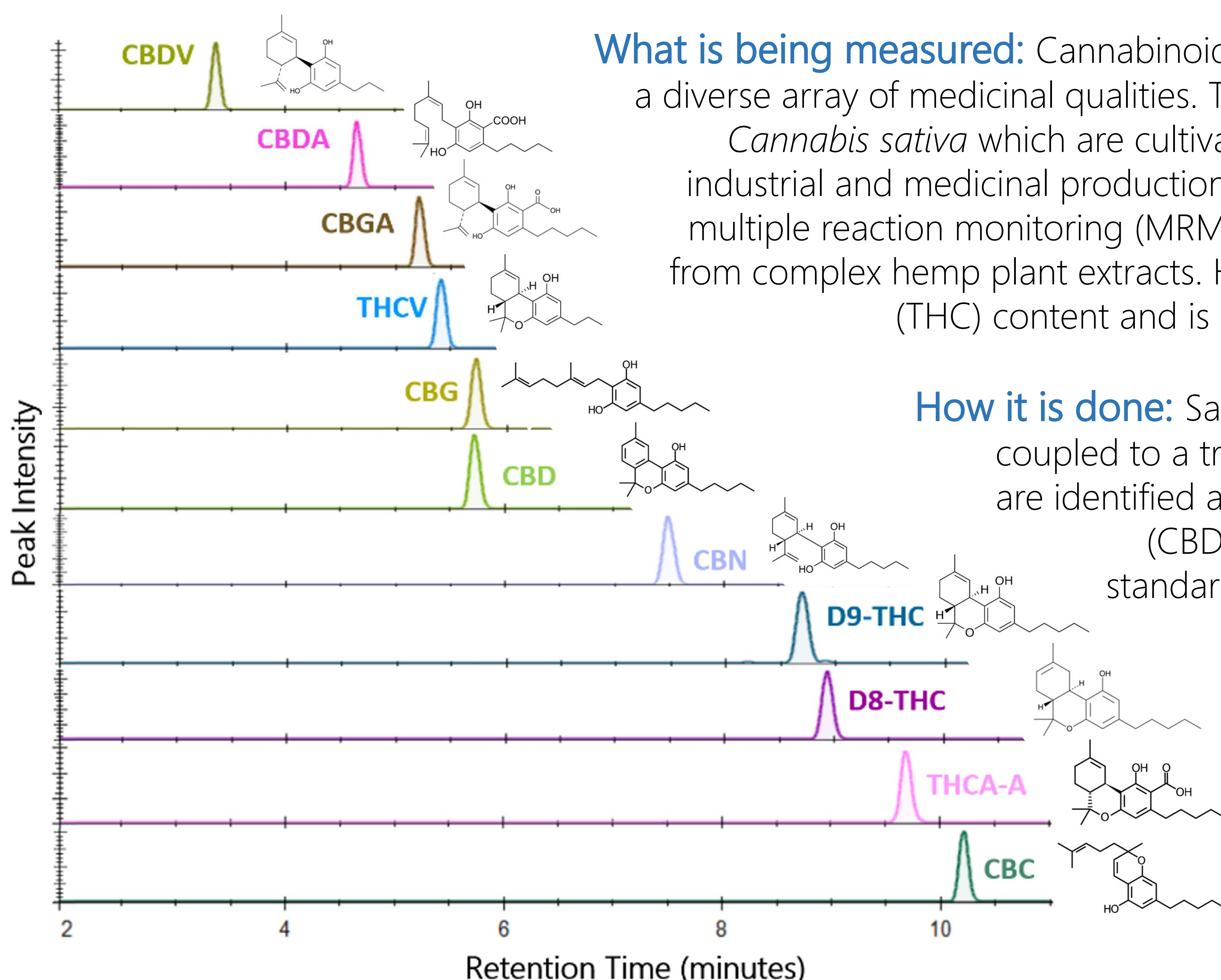
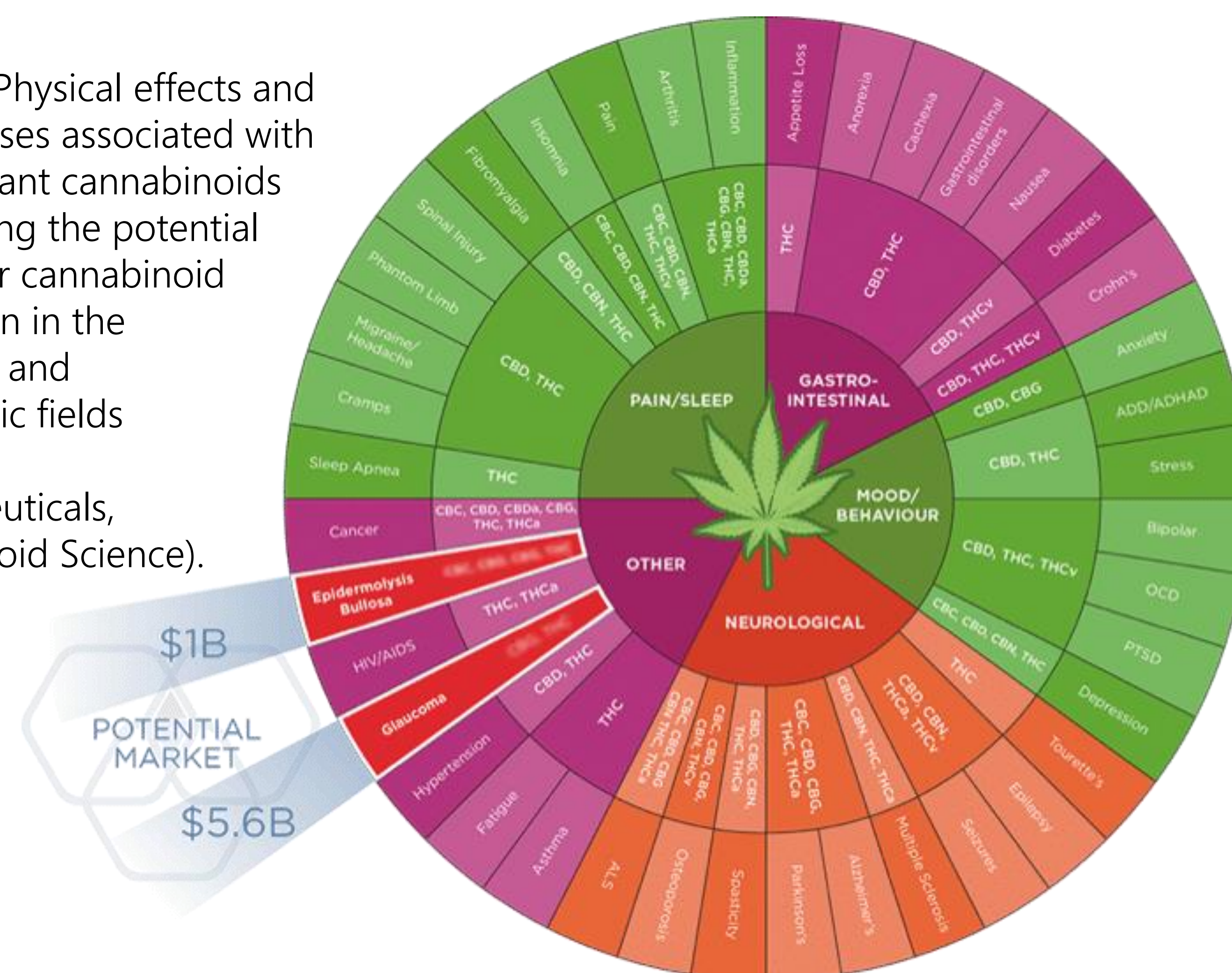


Figure 1. Extracted ion chromatograms and chemical structures of 11 cannabinoids separated on LC-MS/MS (MUAL data).

What is being measured: Cannabinoids are natural products found in various plants that are reported to possess a diverse array of medicinal qualities. These phytochemical compounds are produced in high levels in the species *Cannabis sativa* which are cultivated to reduce potency of hemp products below limits that are required for industrial and medicinal production. Quantification of cannabinoids is made possible by employing a targeted multiple reaction monitoring (MRM) approach to obtain high degrees of sensitivity and specificity of detection from complex hemp plant extracts. Hemp potency is determined by quantifying the total tetrahydrocannabinol (THC) content and is achieved through chromatographic separation of THC isomers (Δ^8 and Δ^9).

How it is done: Samples are extracted in methanol and analyzed using liquid chromatograph coupled to a triple quadrupole mass spectrometer operating in MRM mode. Compounds are identified and quantified using authentic standards. Two deuterium labeled standards (CBD-D3 and THC-D3) are spiked to samples and the quantity of these internal standards is measured to determine the recovery of analytes in the sample matrix.

Figure 2. Physical effects and medical uses associated with various plant cannabinoids highlighting the potential market for cannabinoid production in the medicinal and therapeutic fields (InMed Pharmaceuticals, Cannabinoid Science).



RESULTS

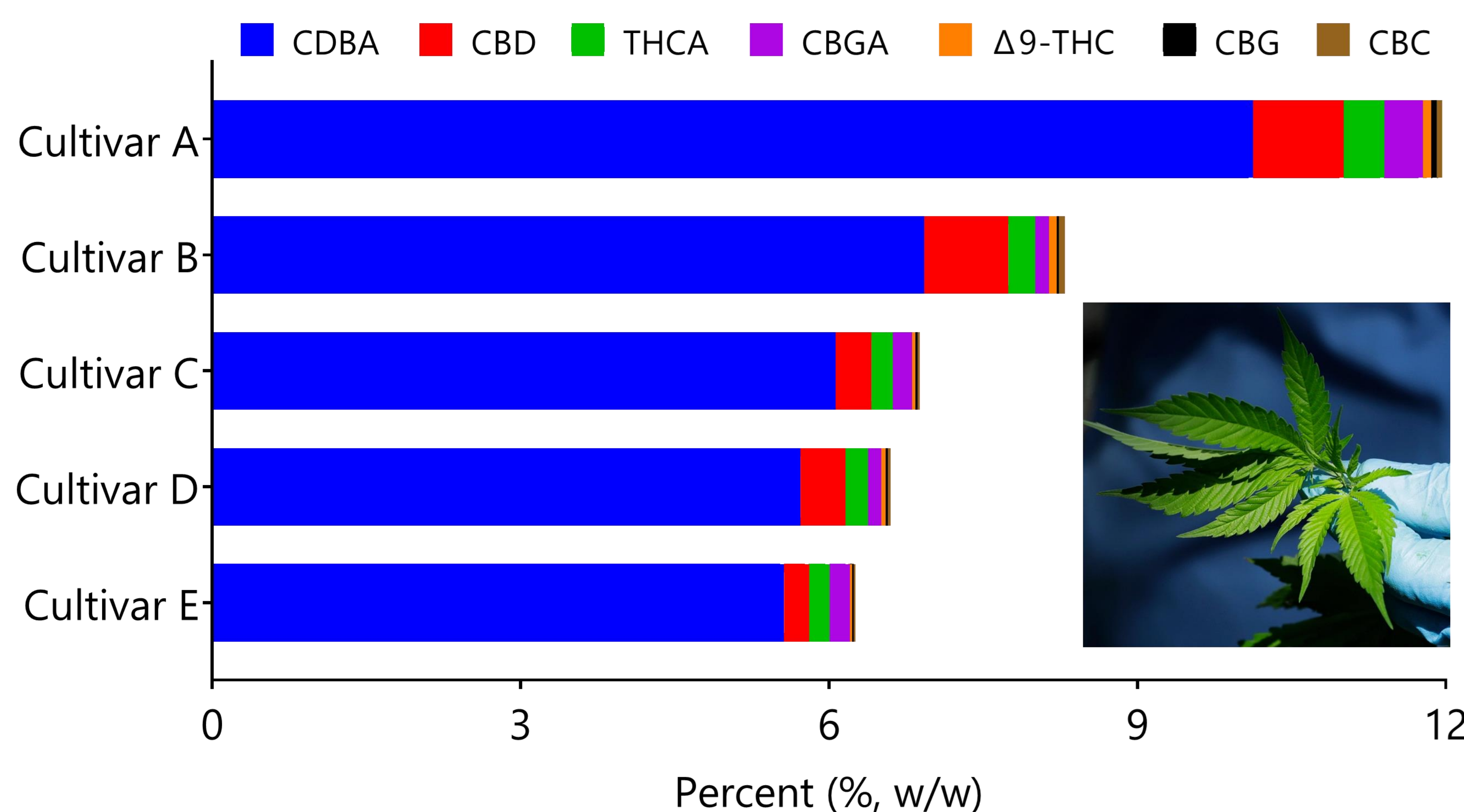


Figure 3. Major cannabinoids in five industrial hemp cultivars (percentage of dry weight) (MUAL data).

INSTRUMENTATION

Shimadzu LCMS-8030



Features

- Triple quadrupole mass spectrometer
- Fast scan speeds with ultrafast polarity switching
- 15,000 u/second with a 0.1 Dalton step width without the loss of mass accuracy.
- Redesigned pseudo-quadrupole collision cell, allows for 1msec pause times to eliminate crosstalk
- Coupled to ESI interface

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Scan for more information

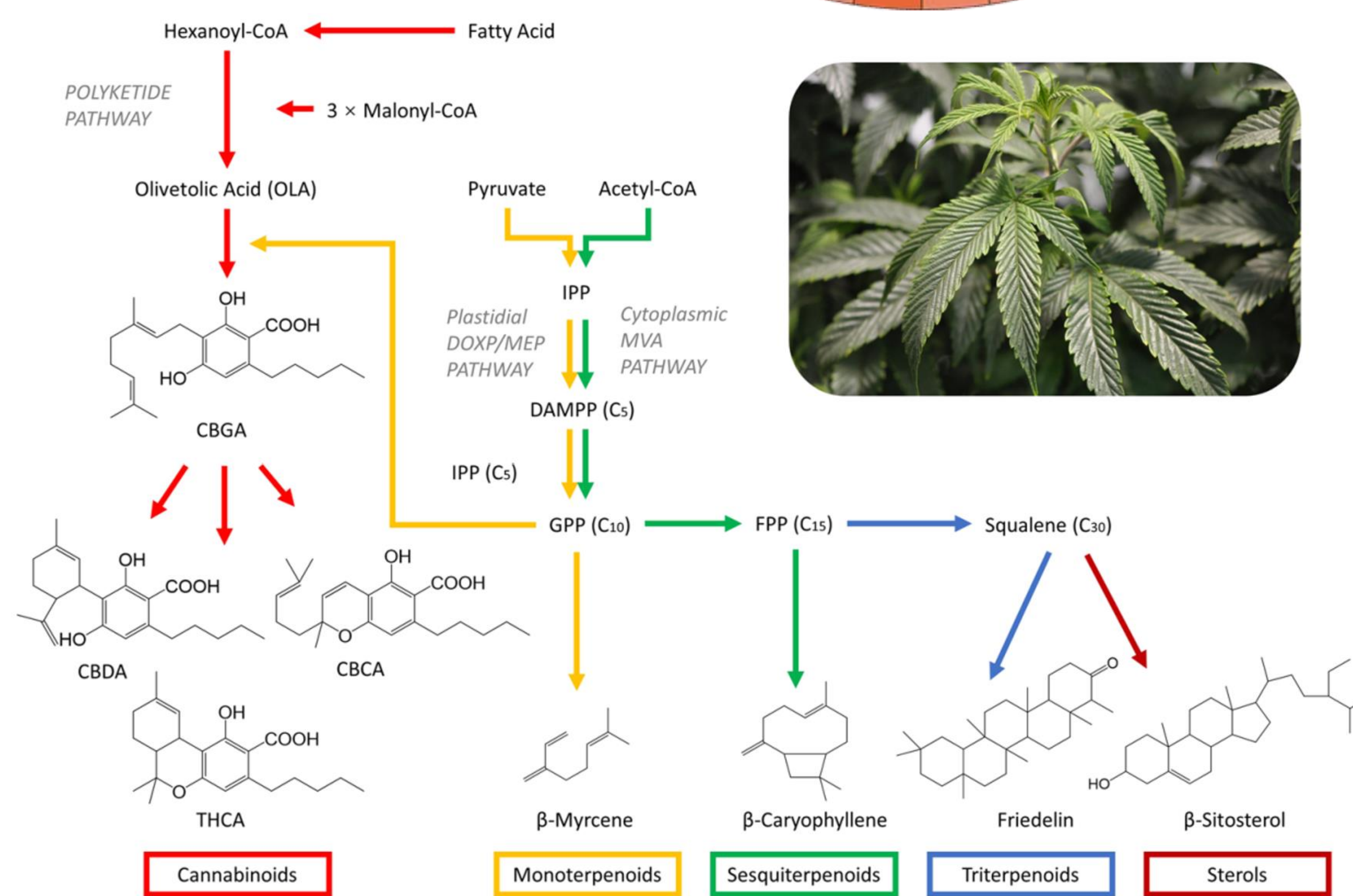


Figure 4. Biosynthesis pathways of cannabinoid, terpenoids, and sterols in hemp (Jin et al., 2020).

Primary applications

