How was my sample analysed?

Your sample was analysed using liquid chromatography – mass spectrometry, or LC-MS for short. This technique is the 'gold-standard' for cannabis analysis can accurately identify and measure very small amounts of cannabinoids in complex samples.

What are the cannabinoid acids and what is decarboxylation?

The cannabis plant makes acid forms of cannabinoids, one of the most common is tetrahydrocannabinolic acid (THCA). THCA itself does not cause you to get "high" but when exposed to light or heat, THCA converts into the neutral form THC by a process called 'decarboxylation'.

This explains why heating cannabis via smoking or vaping leads to more THC being consumed, and a greater "high", than eating raw cannabis. Similarly, with heat, cannabidiolic acid (CBDA) converts to cannabidiol (CBD), and cannabichromenic acid (CBCA) coverts to cannabichromene (CBC). Heating, smoking or inhaling cannabis therefore changes the cannabinoid profile of the plant relative to the profile at room temperature. The totals presented on Page 2 are the sum of the acid and neutral form, adjusted for decarboxylation.

What are all these different 'phytocannabinoids'?

The cannabis plant makes a very large number of cannabinoids (more than 140 at last count) called 'phytocannabinoids'. Many are thought to have therapeutic effects but research into most of them is still at a very early stage. We are conducting research into several of them at the Lambert Initiative. In the CAN-ACT study, we are targeting a few of the most prevalent and well-known phytocannabinoids. These are:

Δ9-tetrahydrocannabinol (Δ9-THC): The primary psychoactive component of cannabis, responsible for the cannabis 'high'.

Tetrahydrocannabinolic acid A (THCA): The acid form of Δ9-THC. It will convert to Δ9-THC when cannabis is smoked, vaporised, or cooked. THCA does not get you 'high' .

Δ8-tetrahydrocannabinol (Δ8-THC): Closely related to Δ9-THC in chemical structure and psychoactive effects, this phytocannabinoid is presently the focus of a large amount of research.

Cannabidiol (CBD) and Cannabidiolic Acid (CBDA): CBD is a well-known phytocannabinoid. CBDA is the acid form of CBD. Neither compounds will get you 'high'.

Cannabigerol (CBG) and Cannabigerolic Acid (CBGA): CBGA is the precursor to both THCA and CBDA in the cannabis plant, that is, all THCA and CBDA are made from CBGA. It's decarboxylated form is CBG.

C*annabichromene (CBC) and Cannabichromenic Acid (CBCA):* CBC is a minor phytocannabinoid. CBCA is made from CBGA, and decarboxylates to CBC. The therapeutic actions of CBC and CBCA are still under investigation.

Cannabinol (CBN) and Cannabinolic Acid (CBNA): CBNA and CBN can form from THCA and THC, respectively, over time as cannabis is exposed to air, light, and heat. CBN is sometimes used as a marker of cannabis 'age' or freshness post-harvest (that is, high CBN may indicate older cannabis).

Cannabinodiol (CBND): CBND can form from CBD, similar to how CBN forms from THC. Very little is known about the prevalence or pharmacology of this phytocannabinoid.

The 'varins' – Cannabidivarinic Acid (CBDVA), Cannabidivarin (CBDV), Cannabichromevarin (CBCV), Tetrahydrocannabivarinic Acid (THCVA), and Tetrahydrocannabivarin (THCV): These phytocannabinoids are closely related to their 'non-varin' equivalents, except that they are missing two carbons in their chemical structure. THCV, the varin form of THC, can be psychoactive although only in large amounts.

Please note, these descriptions are very brief and do not encompass all the things we know about these cannabinoids. We encourage you to continue researching these cannabinoids, particularly if they are present in your sample. Wikipedia is a reasonable starting point for your own research.

What have you found so far in CAN-ACT?

So far, we have observed that the vast majority of samples are of the THC-dominant type, which means that they primarily contain Δ9-THC with little CBD (summing acid and neutral forms). Most samples also contained small amounts of CBG, CBN, and CBC. Only a few samples to date have been of the CBD-dominant type. No samples have contained Δ8-THC. You can see where your sample sits among all samples analysed so far on the graph on Page 2.

This pattern is consistent with prior studies that have analysed cannabis samples from other sources or places such as from NSW Police or from overseas.

Thank you for your participation in the CAN-ACT study.