Epilepsy Action Australia

FACT SHEET:
Cannabinoids

Cannabinoids

Canabinoids are the compounds found primarily in high concentrations in the female cannabis plant and in lesser concentrations in other plants and the human body. There are three main forms of cannabinoids:

- Endocannabinoids are the substances that your body naturally makes to stimulate the CB1 and CB2 receptors[1,2]
- Phytocannabinoids are cannabinoids synthesised in plants that can interact or indirectly stimulate CB1 and CB2 receptors[1,2,3]
- Synthetic cannabinoids are created in the lab usually focusing on single compounds or a combination of isolated compounds [1,2]

Each cannabinoid has a unique influence on the body's endocannabinoid system[3].

Phytocannabinoids

The cannabis plant consists of more than 100 phytocannabinoids and over 400 trace compounds including terpenes which work synergistically and can be found in various ratios in the differing strains of the plant. Known as the entourage effect, these compounds may work together, magnifying the therapeutic benefits of the plant's individual components[2,4]. All the compounds in the raw plant are found in the acid or carboxylate form and begin to convert to the de-carboxylated state soon after harvesting, drying and heating. Further conversion to other compounds can occur as a result of exposure to oxygen, light or aging as illustrated below[5].

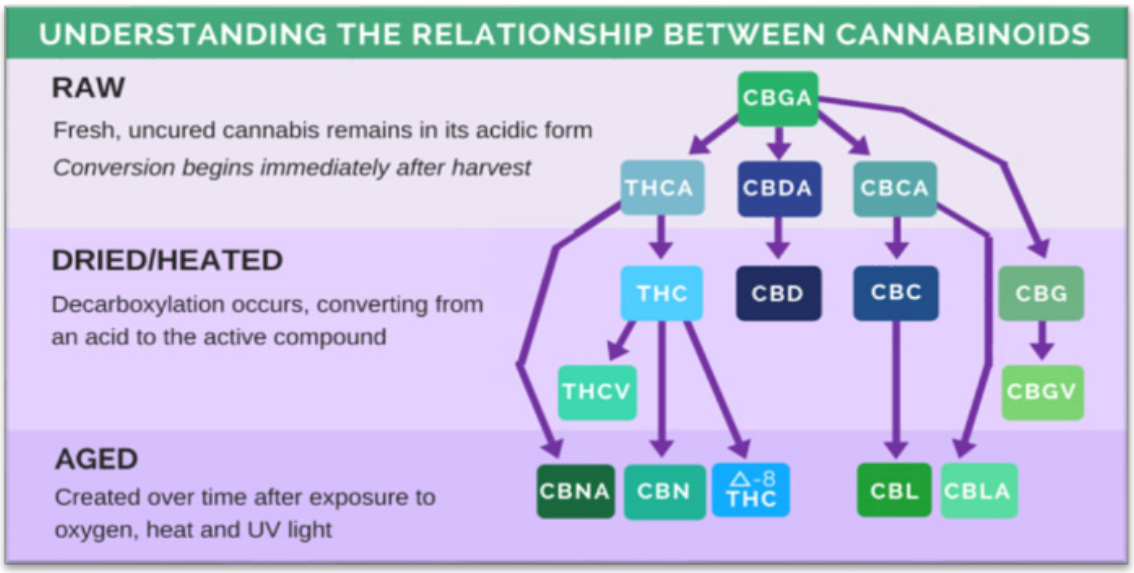

Figure 1[5]

The main compounds of therapeutic interest and research include:

CBG-A Cannabigerolic Acid

Cannabigerolic acid is thought of as the stem cell cannabinoid as it is the precursor to all other cannabinoids[6, 7] and is the direct precursor of CBG. As yet no studies have been published demonstrating it's effect in humans.

CBG Cannabigerol

In the laboratory this non psychoactive compound has been shown to stimulate bone and new brain cell growth. It is also thought to have antibacterial and anti-tumor activity[3]. Human studies are yet to be published.

CBD-A Cannabidiolic Acid

Cannabidiolic Acid was much more commonly found in higher concentrations in Cannabis Ruderalis a wild variety of cannabis found in Russia which is thought to have anti-inflammatory and anti-tumour activity however no human studies have been published to date[3]. Cannabidiolic Acid has been found to be a very powerful 5-HT1A receptor agonist in animal studies and may be effective for the prevention of nausea.

CBD Cannabidiol

Cannabidiol is currently being extensively studied in the preclinical environment and in clinical trials. CBD acts in some experimental models as an anti-inflammatory, anticonvulsant, anti-oxidant, anti-emetic, anxiolytic and antipsychotic agent, and is therefore a potential medicine for the treatment of neuroinflammation, epilepsy, oxidative injury, vomiting and nausea, anxiety and schizophrenia, respectively. The neuroprotective potential of CBD, based on the combination of its anti-inflammatory and anti-oxidant properties, is of particular interest and is presently under intense preclinical research in numerous neurodegenerative disorders[11].

CBD-V Cannabidivarin

Cannabidivarin, a non psychoactive compound has been found in high concentrations in the wild variety grown in northwest India and Nepal[9]. With a demonstrated neurochemical pathway[8]. CBDV has shown anticonvulsant effects in animal models of disease[3]. Clinical trials using cannabidivarin in epilepsy are planned to commence soon.

THC-A Tetrahydrocannabinolic Acid

Tetrahydrocannabinolic Acid, like other acid cannabinoids, is not psychoactive. There is evidence from pre-clinical studies that THC-A has an anti-emetic action and some anti-inflammatory effects[1].

CBN-A Cannabinolic Acid

Cannabinolic acid is the parent compound that decarboxylates into CBN however very little CBN is derived from CBN-A with most CBN being derived from the oxidation of THC. CBN-A is thought to be an anti-inflammatory in laboratory studies[3].

∆-9-THC Delta 9 Tetrahydrocannabinol

∆-9-tetrahydrocannabinol is a neutral cannabinoid, well known for being strongly psychoactive. THC enabled the recent discovery of the existence of the endocannabinoid system in humans. THC has been studied in clinical trials in various forms. There is moderate evidence of effect in some forms for pain, nausea, and Tourette syndrome. International studies are investigating the role of THC in the treatment of breast and other forms of cancer however results in humans are pending. Few clinical trials have compared the effects of THC and modern treatment regimes for these conditions.

THC V Tetrahydrocannabivarin

Tetrahydrocannabivarin has shown inhibition of food intake and reduced body weight as well as some indications that it may possess anticonvulsant, analgesic and anti-ischemic effects in laboratory studies. Clinical trials have not commenced in humans.

∆-8-THC Delta-8-Tetrahydrocannabinol

Delta-8-Tetrahydrocannabinol is an analogue of THC with antiemetic, anxiolytic, appetite-stimulating, analgesic, and neuroprotective properties and exhibits a lower psychotropic potency than ∆-9-THC[5,10,12].

CBN Cannabinol

Cannabinol forms when THC is exposed to oxygen and heat. A cannabinoid isolated from the plant Cannabis that is a metabolite of tetrahydrocannabinol (THC), with potential immunosuppressive and anti-inflammatory activities[13].

CBC-A Cannabichromic Acid

Cannabichromic acid is one of the three compounds synthesized by the plant, out of CBG-A. CBC-A is anti-inflammatory, weakly anti-fungal and strongly anti-bacterial[3].

CBC Cannabichromene

Cannabichromene, a non psychoactive displays efficiency in treating inflammation, pain relief and is both anti-viral and anti-tumour. CBC has been shown to stimulate the growth of bone tissue[3].

CBL Cannabicyclol

Cannabicyclol is a degradative product - with exposure to light CBC converts to CBL. Its medical properties are not known[3].

CBL-A Cannabicyclol Acid

Cannabicyclol Acid is the most stable of the cannabinoid acids being resistant to heat decarboxylation. CBL-A is thought to have anti-inflammatory and anti-tumour properties[3].

N.B: This information is given to provide accurate, general information about cannabinoids. Medical information and knowledge changes rapidly and you should consult your doctor for more detailed information. This is not medical advice and you should not make any medication or treatment changes without consulting your doctor.

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