



# MEDICAL CANNABIS

## The current and future investment market

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**The medical cannabis industry has flourished over the last five years, as we see governments across the globe legalise its use in response to consumer demand and growing scientific evidence that cannabis is an effective treatment for a range of conditions.**

Some of these conditions include chronic pain, post-traumatic stress disorder (PTSD), sleep disorders, anxiety, epilepsy, nerve pain, chemotherapy-induced nausea, Tourette syndrome and glaucoma.

Earlier this year, the peak international authority on medicine, the National Academy of Sciences and Medicine, reviewed some 100,000 studies on pre-clinical and clinical trial data around medical cannabis, and determined that there was sound evidence that cannabis works as a medicine in a number of these diseases, including for the treatment of chronic pain, multiple sclerosis (MS) spasticity and chemotherapy-induced nausea.

The market for prescription medicines is huge, with Americans spending an estimated \$40 billion on prescription medications in 2016 to treat these conditions; expenditure is forecast to grow to more than \$44 billion by 2019. In Australia, there are more than three million people suffering from chronic pain, and we have a real problem with the amount of opiates

being prescribed. Cannabis medicines have been used successfully for around five years in Canada to treat chronic pain, and the overall usage of opiates has been dramatically reduced.

Cannabis is a unique plant that contains over 100 different phytocannabinoids, which include the well-known psychotropic tetrahydrocannabinol (THC) and its dance partner, cannabidiol (CBD). These plant-derived cannabinoids bind natural receptors in the body called the endocannabinoid system that are present on the nervous system and also throughout the immune system. This is why we see a wide range of therapeutic effects, from pain control to anti-inflammatory activity, with different ratios of key cannabinoids.

The oldest known written record of medical cannabis use comes from the Chinese Emperor Shen Nung in 2727 BC, and the ancient Greeks and Romans were also familiar with the use of cannabis as a medicine. Unfortunately, the United States declared the war on drugs, with cannabis highly taxed, and then prohibited. A 1930s campaign by the US Federal Bureau of Narcotics portrayed marijuana as a powerful, addictive substance that would lead to narcotics addiction. The Controlled Substances Act (CSA) of 1970 classified marijuana, along with heroin and LSD, as a 'Schedule I' drug, meaning that it had the relatively highest abuse potential and no accepted medical use.

Today, the US recreational and medicinal cannabis market is valued at US\$3.5 billion, with approximately 65 per cent of the market attributed to patients using medical cannabis for chronic pain (IBISWorld, 2016).

The fact is that cannabis THC is a very safe drug and has been widely used by people for centuries; it is only now that the science is catching up. Pre-clinical studies show that animals can tolerate doses of up to 1000 milligrams per kilogram. This would be equivalent to a 70-kilogram person swallowing 70 grams of the drug – about 5000 times more than is required to produce a high. Despite the widespread illicit use of cannabis, there are no instances of people dying from an overdose. So, with this in mind, let's look at the potential future for cannabis as a medicine in Australia.

Many companies that have sprung up in the medicinal cannabis space are engaged in a range of activities, from growing the plants, right through to prescribing medicines for patients.

In Australia, medicinal cannabis was legalised in November 2016. Imports of medicinal cannabis have been approved to treat patients immediately until a local industry can be developed. The first Australian licences to grow medicinal cannabis and produce local medicines are being granted now.

I am proud to be involved in two Australian companies that are fast emerging as global leaders in their field. AusCann is involved in the production of high-quality clinical-grade medical cannabis medicines, and Zelda Therapeutics is building on the learnings from the experiences in the United States and Chile, where medical cannabis has been used to treat patients for a number of years. We have seen the anecdotal evidence that certain medical cannabis formulations work against a number of disease targets. This is the basis of our clinical trials to validate these cannabis medicines for widespread medical use.

AusCann Ltd (ASX: AC8) is an Australian company that has been licensed to grow medicinal cannabis in Australia and Chile, and it is focused on treating patients for chronic and neuropathic pain. There are more than three million patients in Australia that suffer from these conditions. AusCann has a partnership with Canopy Growth Corporation in Canada, the largest producer of medicinal cannabis in North America, with a valuation of more than A\$1.2 billion. Canopy is



also the major shareholder of AusCann. AusCann has expanded its operations into Chile, where it holds the only licence to grow medicinal cannabis. The Chilean Government is a leader in Latin America, with a high-quality regulatory body and health ministry.

While cannabis has been clinically validated in a number of key disease areas such as neuropathic pain, there are other opportunities where there is a good deal of anecdotal patient evidence, but a lack of high-quality clinical trial data. Areas here include insomnia, childhood epilepsy, Crohn's disease and inflammatory skin conditions.

Zelda Therapeutics Ltd (ASX: ZLD) is focused on clinical trials of specific medicinal cannabis formulations that were developed in California and Chile. The company will soon commence a clinical trial in Australia for insomnia and are getting ready to perform several clinical trials, in Chile, in autism, insomnia and eczema.

Another very interesting area for cannabis is cancer. Currently, medicinal cannabis is being used in Canada and the United States to control the side effects of cancer treatment, such as chemotherapy-induced nausea; however, there is emerging preclinical data that demonstrates the potential use of cannabis formulations to slow or stop the growth of cancer. Zelda has achieved some positive pre-clinical results with THC-rich cannabis formulations against several human breast cancer lines, including hard-to-treat triple negative cancer cell lines.

So, the future looks brighter for patients that suffer from these conditions as cannabis-based medicines become available for them. Companies in the cannabis medical space have large opportunities in front of them if they can navigate the strict legal and regulatory environment. 🌱