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Cann10: Cannabis Leadership Course

Report

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Author: Marguerite White MNurs, RN, CNS.

Background:

The endocannabinoid system (ECS) is an important physiological system essential to maintaining our health. It is NOT a system that you may have learnt about during your nursing training. It seems to work behind the scenes to maintain our health and is often described as helping to maintain our 'homeostasis'. With each seminar, forum or course I attend I am learning more about this amazing system (and the cannabis plant). The ECS works as neurotransmitter or rather modulates other neurotransmitters and also has immune functions. The ECS is relatively new territory discovered in Israel in the 1990s and is only recently coming to world-wide attention.

Symposiums, Conferences and Forums:

I had been fortunate having attended the United in Compassion Medicinal Cannabis Symposium in Tamworth in 2014. I arrived a sceptic without *any* background knowledge of medicinal cannabis. I discovered the Cann10 Cannabis Leadership Course around the same time as I attended Melbourne's United in Compassion (UIC) Medicinal Cannabis conference in 2017. I liked the Cann10 idea of the small group of no more than 30 participants to learn more about medicinal cannabis. The course had originally run in Israel and then in the United States. Here in Australia Cann10 has partnered with DeakinCo. which is the corporate training arm of Deakin University. This course consisted of 4 intense and enjoyable educational days with educators who were very available to students, as well as a couple of networking events. Most of the presenters attended in person and a couple of presentations were via skype.

The course provided education around the history of cannabis, the endocannabinoid system, legal and horticulture issues, alongside local and research from around the world. The program had an emphasis on encouraging start-up projects and on mentoring student's ideas. It actively created a space for participants to network.

Daryll Davies the program director leads us seamlessly through the course. My fellow students were passionate about the possibilities of this emerging industry and were very supportive of each other in their endeavours. I want to say that I am NOT an expert here as this is quite a complex field but would like to share some of the information gained in this course.

Cannabis throughout history

Justin Sinclair gave us an amazing talk around cannabis through ancient times to the modern era. Justin is a pharmacognosist which means that he studies drugs that have originated from nature. The field includes areas of cultivation, production and the standardisation of drugs. He is herbalist, lecturer and chief scientist for United in Compassion. The take home message for me was how important this plant had been through human history. Ancient cannabis history had been captured in stone, ancient texts and in art. Our own colonial history included cannabis cultivation. It is truly amazing how 70 years of demonization of this plant and its links to intoxication is so negative and pervasive. The 'stoner image' is a difficult one to shift. Yet against this there is hype and hope that medicinal cannabis could bring relief to so many who are suffering. Justine reminds us we can look back at its very long history in health and in industry.

Growing Cannabis and emerging job opportunities

Several the lectures involved education around growing medicinal cannabis. This was high tech stuff. They spoke of new technologies, emerging jobs and markets.

Adam Miller the founder of Buddintech, took us on a journey looking at the changing face of cannabis around the world. It's a fast-moving space. Innovation, new technology and job opportunities were central to this talk. The blockchain banking system was briefly explained and viewed as a new digital system that was a safer way to do business and to track products. New advances in lighting were discussed. Innovations also included the extraction of terpenes. Research is going on everywhere. Israel is currently conducting more than 120 trials. Peripheral markets such as cosmetic, food supplements, fibre, biofuel and the recreational market were also discussed. Multiple jobs will be needed within groups such as the growers, the dispensaries, to lab testing, logistics and manufacturing.

Avishai Karney is a biochemist with native extracts. He is a graduate of Cann10 Israel. His business includes developing and implementation of oil extraction techniques. He runs a Cannabis consultancy service to Australian companies such as Relief Global and United Cannabis Australia. His was a beautiful presentation on plant physiology, cannabis anatomy and cultivation. Growing cannabis is big business and the optimal growing conditions are paramount. We looked at plants from their roots, stems and leaves to photosynthesis. Plant growing 101. We looked at the trichomes-the flower buds which are cannabinoid factory of the plant. Sexing the plant was demonstrated. Growing the best crop included techniques such as low and high stress training, optimal indoor lighting and outdoor condition, filtration, temperature, growing mediums, humidity, airflow-circulation, having a good clean water source. Then there is drying and curing.

Medicinal Cannabis Extraction

What will help medicinal cannabis be recognised as a safe standardised product will be the way it is grown and processed says Dr Katheryn Mumford senior lecturer from the Department of Chemical and Biomolecular Engineering, University of Melbourne. Katheryn's speciality is in extraction techniques and shared her academic experience and expertise. This area was completely new territory for me. Later Elisabetta Faenza talk helped support this new knowledge. The co-founder of Leafcann Elisabetta was an impassioned speaker. She shared the entrepreneur's journey. Her company will potentially be an important producer of medicinal cannabis using world class large CO₂ extractors. Here in Australia her company plans to become an RTO for horticulture studies and frontline medicinal cannabis managers. **Leafcann** was a sponsor of the course. Stayed tuned to this space.

From the Clinicians

American **Maria Gordon** from Aunt Zelda's Inc. & Calla Springs Wellness; Zelda Therapeutics has plenty of clinical experience. Maria has been working with medicinal cannabis for a long time now. Her journey started with her own ill health. Her data base has information that covers the journey of clients each with differing health issues and being treated as individuals. Start low and go slow is the motto of prescribing. Get feedback from the client. How is that working and make adjustments. This is personalised tailored medicine. Please note that the concept of a new era of medicine being personalised was a theme throughout the course. In terms of research the client/patient will be an important guide to treatment. This is known as N=1.

Leah Bisiani is an Australian registered nurse and dementia consultant. Not addressing pain adequately in aged care she stresses is neglect. In Australia we are

moving towards an ever-increasing aging population where pain will become a more widespread issue. Opiates are used for pain but come with specific risks as do the commonly used adjunct agents. Pain comes in different guises. Acute pain, pain with terminal illness, somatic and neuropathic pain. Impact of pain is immense on people's lives. An important tenant she upholds is the fundamental human right to effective pain relief. For Leah medical cannabis should be considered as an alternative therapeutic agent in aged care. With the aging baby boomers to enter aged care facilities in the near future the call for action may become louder. Much louder.

Important Local Research

Dr Richard Kevin is a post-doctoral research associate at the Lambert Institute, Sydney University. The research he says has been very encouraging in several areas including epilepsy, pain, and cancer. The non-psychoactive cannabinoid-cannabidiol (CBD) had been reported to be useful in treating the children with the intractable seizures of Dravet syndrome. \$34 million was donated to Sydney University by Barry Lambert for medicinal cannabis research. Barry's granddaughter has Dravet syndrome.

Richard touched on the chemical composition in cannabis beginning with a comparison between cannabis sativa and indica. This is almost dismissed as most plants today are hybrids of the two. Our interest is directed to the different minor cannabinoids and terpenoids rather than the average amounts of THC or CBD which a strain may contain. While THC and CBD seem to get most of the attention they are but a part of the bigger story. For me it had been like looking at the periodic table at school. There appears to be so many letters standing for the different cannabinoids found in cannabis.

In brief Cannabinoid productions happens in the glandular trichomes-the tiny almost microscopic hair like structures on the flower buds on female cannabis plants. The trichomes are cannabinoid factories. Terpenes and phenols combine to make cannabinoid Cannabigerolic acid -CBGA. CBGA is the mother cannabinoid. From there enzymes convert CBGA to other cannabinoids. There are three main cannabinoid lines THCA, CBDA, CBCA. The A stands for the acid form of a cannabinoid and is not psychoactive. For example, Tetrahydrocannabinolic acid (THCA) needs to be heated to turn to the psychoactive Δ^9 -THC. (Please refer to the infographic from the Elemental Wellness-Steep Hill Halent found online to help with this information).

Back to THC and CBD. Richard reminds us that the THC content of recreational street cannabis has changed over time with a graph by El Sohley from 2016 in NSW showing THC rising from 4% to an 12% average with the CBD profile decreasing. NB: This loss of CBD may prove to be an important contributor to developing psychosis in some individuals. As an aside it is the terpenes that will attract the sniffer dog's attention rather than THC and as found in spices and food plants may lead to a false positive by the dogs.

Richard gives us a briefly overview of the ECS. We have a least two cannabinoid receptors. CR1 is mostly found in the brain and CR2 mostly outside of the brain. We produce our own endocannabinoids which interact with the cannabinoid receptors. Two of these are Anandamide (AEA) and 2-Arachidonoylglycerol (2-AG). The purpose of the ECS is to assist with our homeostasis-or wellbeing. It works as a retrograde feedback loop to impact how much a specific neurotransmitter is firing. The example given was for epilepsy. Epilepsy is described as an overexcitement of neurons-too much firing. GABA is the neurotransmitter for the '**STOP**' firing signal

and Glutamate is the neurotransmitter for 'GO' or the keep firing signal. With fewer GABA stop signals you have epilepsy. Anticonvulsants such as benzodiazepines magnify GABA. CBD magnifies GABA inhibition. Thus, the ECS acts to balance the firing. Homeostasis. This brings us to the Lambert institute PELICAN study. (Paediatric Epilepsy Lambert Initiative Cannabinoid Analysis). No specific results were given by Richard, so we await the results of this research.

Understanding cannabis as neurotransmitter

Australian **Dr Katrina Green**, Medical and Health Science lecturer from the school of medicine, University of Wollongong and research scientist helped us understand the ECS. **Katrina** focused on the brain, neurones, neurotransmission, and demonstrated how cannabinoids act as neurotransmitters. She had the group role play the activation of GABA and Glutamate under the control of the endocannabinoid system. I have always had a difficult time understanding GABA & Glutamate. Simplified and concrete I get it. WOW. However ultimately, it's the cannabinoid signalling system is quite complex. The system exerts vast effects on the brain and body.

Katheryn ended with a message that was especially valid as new knowledge continually emerges. Beware of FAKE news.

Cancer and autism research

Dr Dedi Meiri, <http://dmeiri.net.technion.ac.il>

Dr Meiri is a cannabis scientist, laboratory of Cancer Biology and Cannabinoid Research at the Technion in Israel. It was his work that moved me towards a passionate interest rather than a general interest in cannabis therapy. I am a grandmother of a child aged six with non-verbal autism. Research on cannabis and autism followed the results of cannabis treatment with young people who had intractable epilepsy who also had autism. The research participants had been institutionalised due to their violent behaviour. The treatment had them **return home**. The treatment that had worked was a very specific strain. Minor changes in the cannabinoid profile saw 'meltdowns' return. This issue was quickly identified. I was able to ask Dr Meiri via skype about the research and when this work would be published. Their research awaits publication.

The centre also had good results with treating cancer testing multiple strains at a time. His centre is able to break down the cannabis into its many cannabinoids not just a couple. This is revolutionary technology. To add to the complexity of research he reminds us that cancer comes in a variety of forms. For example, there are 20 different types of breast cancer. Again, the specific profile of cannabis strains used in the research proved to be important. This fact impacts on how we do research. Small tweaks in a plant profile can alter results significantly from no impact to cancer cell death. The same was true for autism treatment.

Companies

Medicinal Cannabis Company, Australia.

Paul Benhaim is CEO and founder of Elixinol & hemp foods Australia. He reminds us that hemp has gone from being seen as a stoner product to something used in clothing, housing, plastic *type* products and then on to something that can assist us in our health. Hemp seeds are finally recognised as legal-able to be consumed as food in Australia. That only happened last year. I have been buying hemp seeds. They are high in omega 3 & 6 fatty acids. Not just the cannabinoids are of health benefit.

While non-psychoactive and very low in THC purchasing CBD oil however is not 'easy' in Australia. His company is able to supply and provide guideless to legal access in Australia. He promotes the whole plant approach. Isolated compounds or synthetic cannabinoids are described as not having the powerful entourage effect or synergistic effect-creating the unique therapeutic results. Medicinal cannabis he reminds us has properties that are neuroprotectant and help with immunity. Cannabis can be used as an analgesic, antioxidant, anti-inflammatory, anti-emetic, anti-insomnia, antidepressant, anxiolytic, anti-epileptic, bone-stimulant.

Summary

'Cannabis' should not be seen as one homogenous plant. There are many strains of Cannabis each having a different profile of cannabinoids along with different terpene and flavonoids profiles. This partly explains the complexity of this plant. Some concerns have been raised when pharmaceutical companies try to isolate specific components of the plant. Concerns were raised about barriers for doctors such as the length of time it takes to do the paperwork for their client to get access rather than a lack of their knowledge. Legal and regulatory issues abound for all stakeholders. We await the results from research including those from the Lambert Institute in Sydney and for me the work on autism from Israel.

This was a well put together gathering of experts and motivated participants. It was informative and importantly facilitated networking of all parties. The group was small which meant that the speakers had been informed of our individual interests and/ or concerns. The guest speakers stayed on to talk informally with students at length. Disappointing for me had been the lack of other health workers in this particular group but further opened my eyes to the wide range of skills and technology needed to produce safe medicine. A different student group may have had Cann10 focus on some other specific issues.

This is an emerging field that nurses may come to have an important role. Nurses will need training in this new field and maybe we could get excited as areas that had been previously treatment resistant have new treatment options to explore. This importantly includes problematic drug use. Often seen as an '**entry**' drug cannabis may become an important '**exit**' drug. While we must remain sceptical about magic bullets consider our clients who have a multitude of issues that include pain, depression, anxiety or PTSD. Could medicinal cannabis help? Could medicinal cannabis be used in detox setting for example?