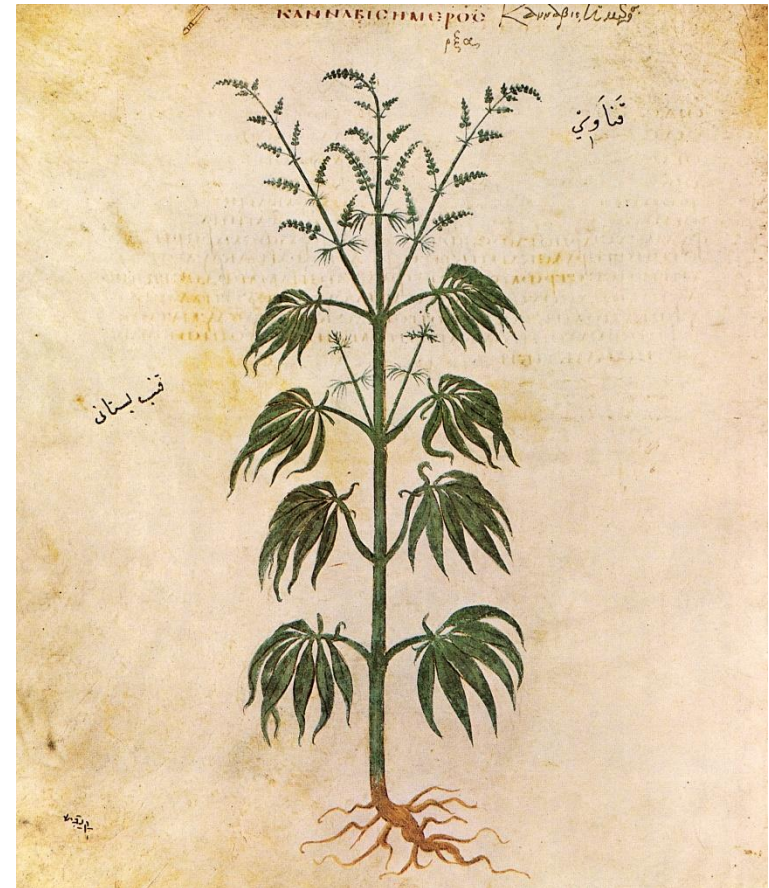


History Of Medical Cannabis

- Historical and archaeological evidence of widespread use in ancient times as medicine, food, textiles & for sacraments, rituals
- Possibly first domesticated crop



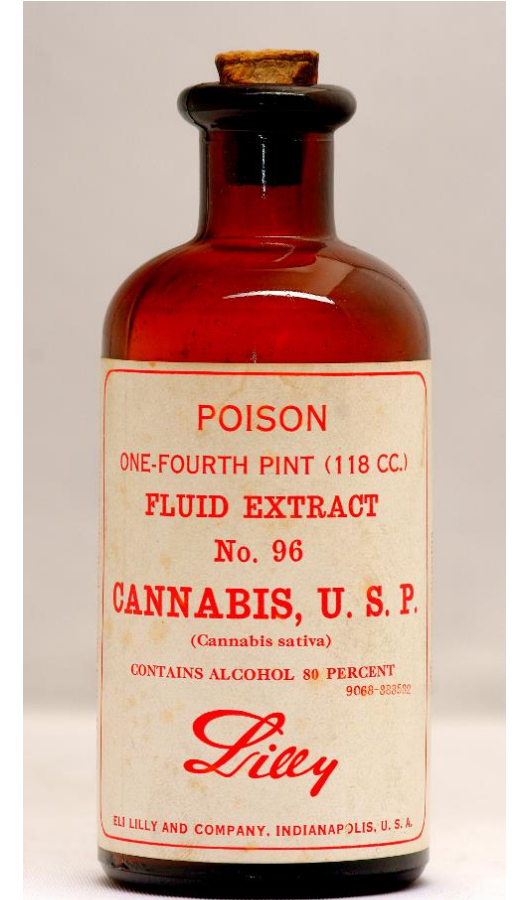
Introduction Into Western Medicine



- Brought in to western medicine in 1841 by Sir William O'Shaughnessy after visiting British India
- Over 2000 cannabis preparations including cough mixtures for children, prescribed by doctors, made by pharmacists

Cannabis In The 19th Century

- Included in American Pharmacopeia.
- Sir J. Russell Reynolds, personal physician to Queen Victoria recommended for treatment of menstrual cramps
- Produced by major pharmaceutical companies Eli Lilly, Parke -Davis and Bristol-Myers Squibb.
- 1937- prohibition
- 1942- removed from American Pharmacopeia



Prohibition



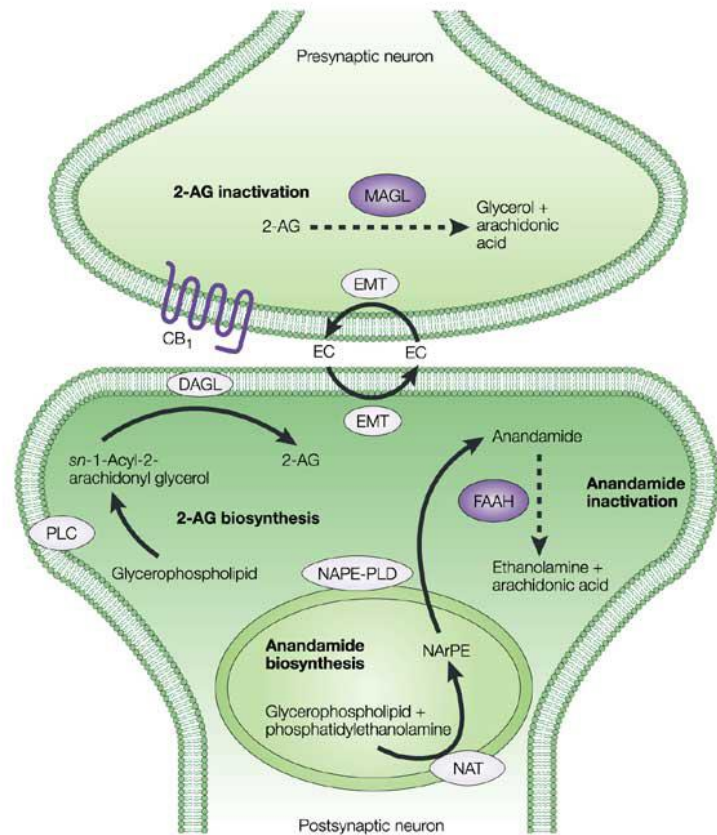
- Prohibition led to creation of black market
- Focusing on narcotic effects of the plant
- Pushing for higher THC levels
- Missing out on medicinal properties of the plant and scientific research

Discovery Of THC

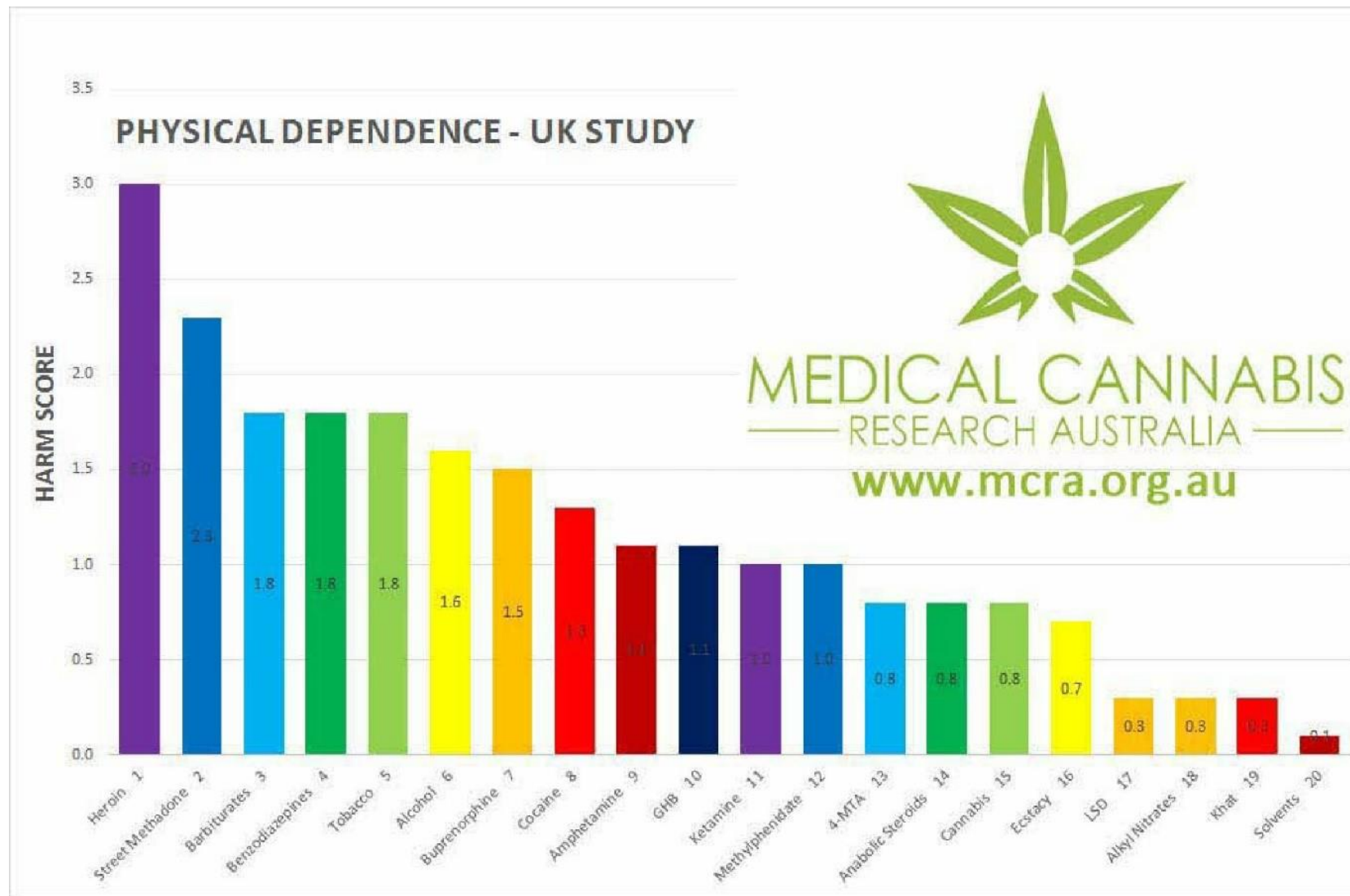
- **1964**—isolation of **THC** by Prof R. Mechoulam
 - Delta-9 Tetrahydrocannabinol—psychoactive part of cannabis plant
 - Analgesic, anti nausea, anti vomiting, anti inflammatory, anti tumour, appetite stimulant
- Further research led to discovery of **CBD and** 100s of other cannabinoids
 - **CBD**-non psychoactive, non -addictive, non-toxic, highly therapeutic
- 1991-cloning of CB1 receptor 1993-CB2 receptor
- 1993-anandamide
- 1995- arachidonoylglycerol (2-AG)



The Endocannabinoid System



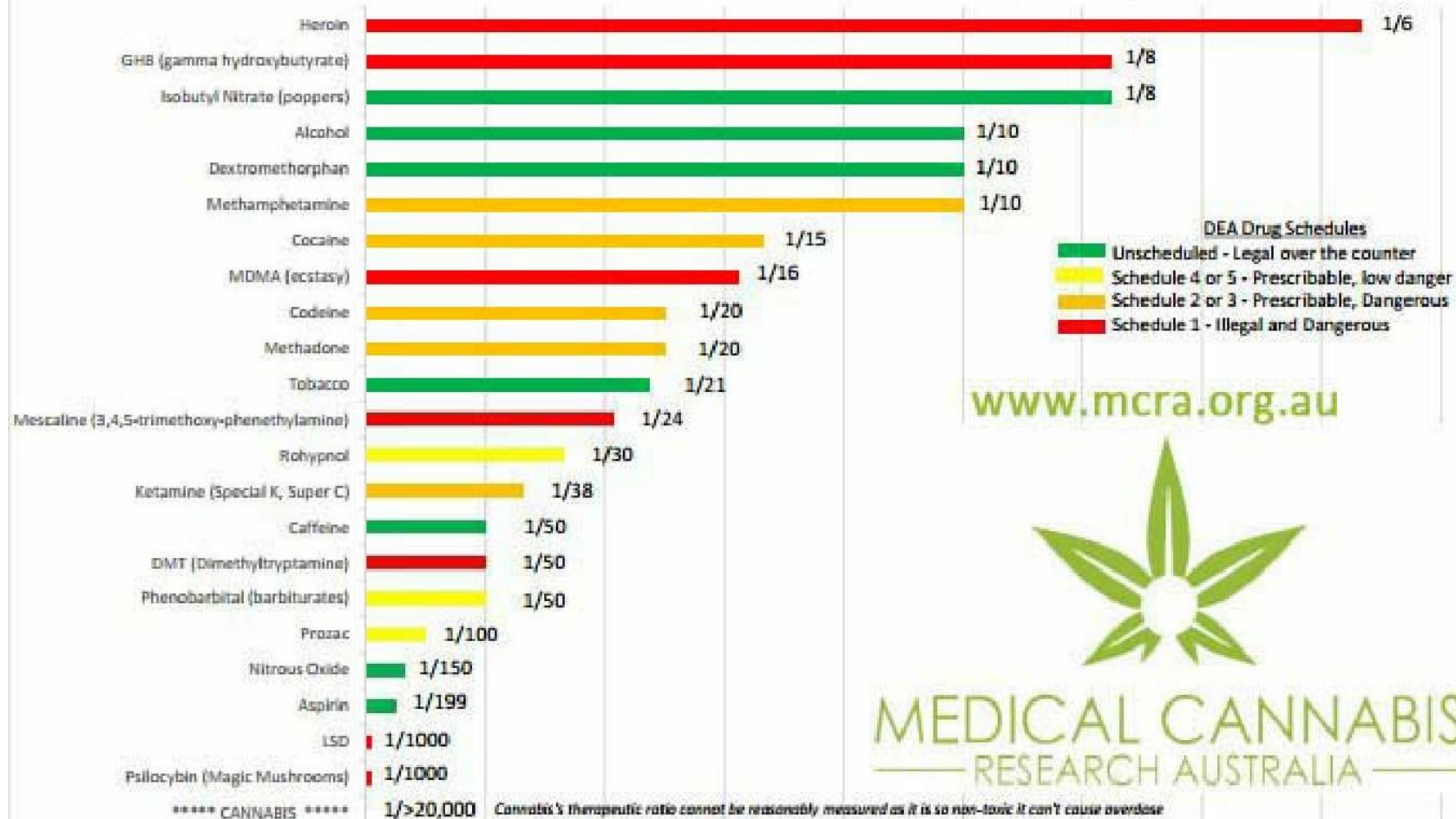
- Universal system of physiological regulation, homeostasis and communication
- Involved in control of basic physiological functions: Eat, sleep, relax, protect, forget
- Consists of
 - CB1 and CB2 receptors
 - Endocannabinoids—anandamide and 2-AG
 - Enzymes- FAAH-Fatty Acid Amide Hydrolase
 - MAG lipase—Monoacylglycerol lipase
- CB1- located in the brain and spinal cord
 - Cerebellum, basal ganglia, hippocampus and forebrain
 - Low densities in areas controlling cardiovascular and respiratory functions
 - Mediates many of the psychoactive properties of cannabinoids
- CB2 - mostly in immune system



Cannabis is low on the addiction scale. Heroin is the most addictive substance with a harm score of 3. Cannabis is half as addictive than alcohol (1.6) and slightly lower than caffeine/coffee not on this scale but around 0.9 .

"Drug harms in the UK: a multi-criteria decision analysis", by David Nutt, Leslie King and Lawrence Phillips, on behalf of the Independent Scientific Committee on Drugs, The Lancet.
[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(10\)61462-6/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)61462-6/abstract)
http://www.economist.com/blogs/dailychart/2010/11/drugs_cause_most_harm
https://www.thevespiary.org/rhodium/Rhodium/Vespiary/talk/files/6416-615_Pharmacology_Therapeutics_NUTT_Rational_Scale_Harm_Drugs_Misuse07ea.pdf

ACUTE LETHAL TOXICITY - PSYCHOACTIVE SUBSTANCES - US study 2004



Therapeutic Ratio - Effective dose over lethal dose

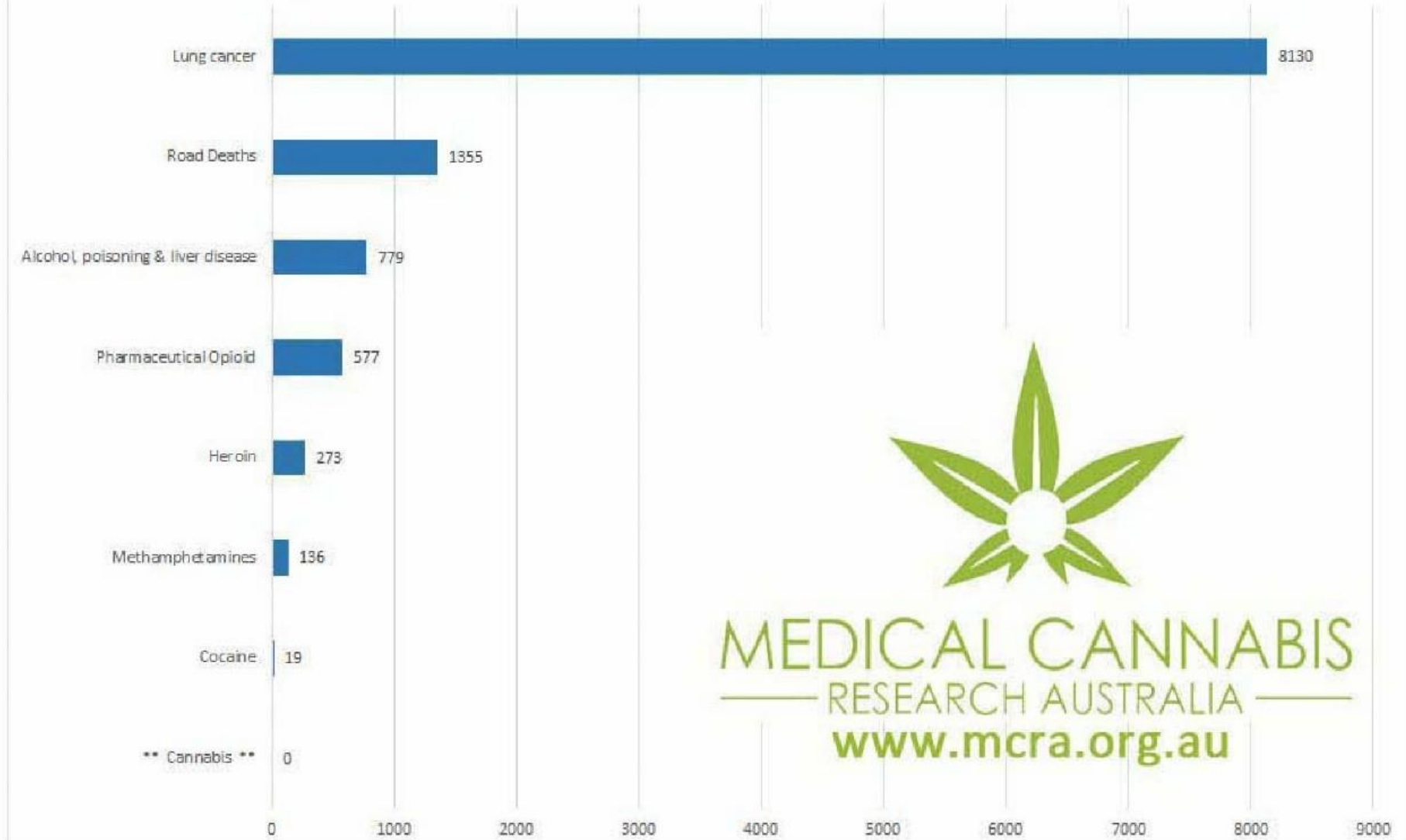
This graph reflects how easy it is to overdose on certain substances. 1 being the dose to get an effect and the second number being what would cause death. Using the example of alcohol being 1/10. 4 Glasses of wine may get you drunk. 40 may kill you. In the case of Cannabis 1 joint may get you high, in excess of 20,000 may kill you which would be virtually impossible to do.

<https://www.ncbi.nlm.nih.gov/pubmed/15139867>

<https://rgable.files.wordpress.com/2012/02/toxicity-addiction-offprint2.pdf>

http://politicosfin.50megs.com/risk/Toxicity.Comparison_Addiction.99,p686_2004.html

Drug-induced and other causes of death in Australia 2012



It is virtually impossible to overdose on Cannabis. Australian ABS figures from 2012 reflect this. In comparison to other illicit and prescription medication.

REFERENCES:

- 1- ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/NDARC%20BULLETIN%20Opioid%20Deaths%202012.pdf
- 2- ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/NDARC%20BULLETIN%20Coc%20%26%20Meth%20Deaths%202012.pdf
- 3 - www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3303.02015?OpenDocument

Potential Applications in General Practice

- Chronic Pain Management
- Depression, Anxiety, PTSD
- Nausea, CINV
- Palliative care
- Treatment of addictions
- Epilepsy
- MS Spasticity

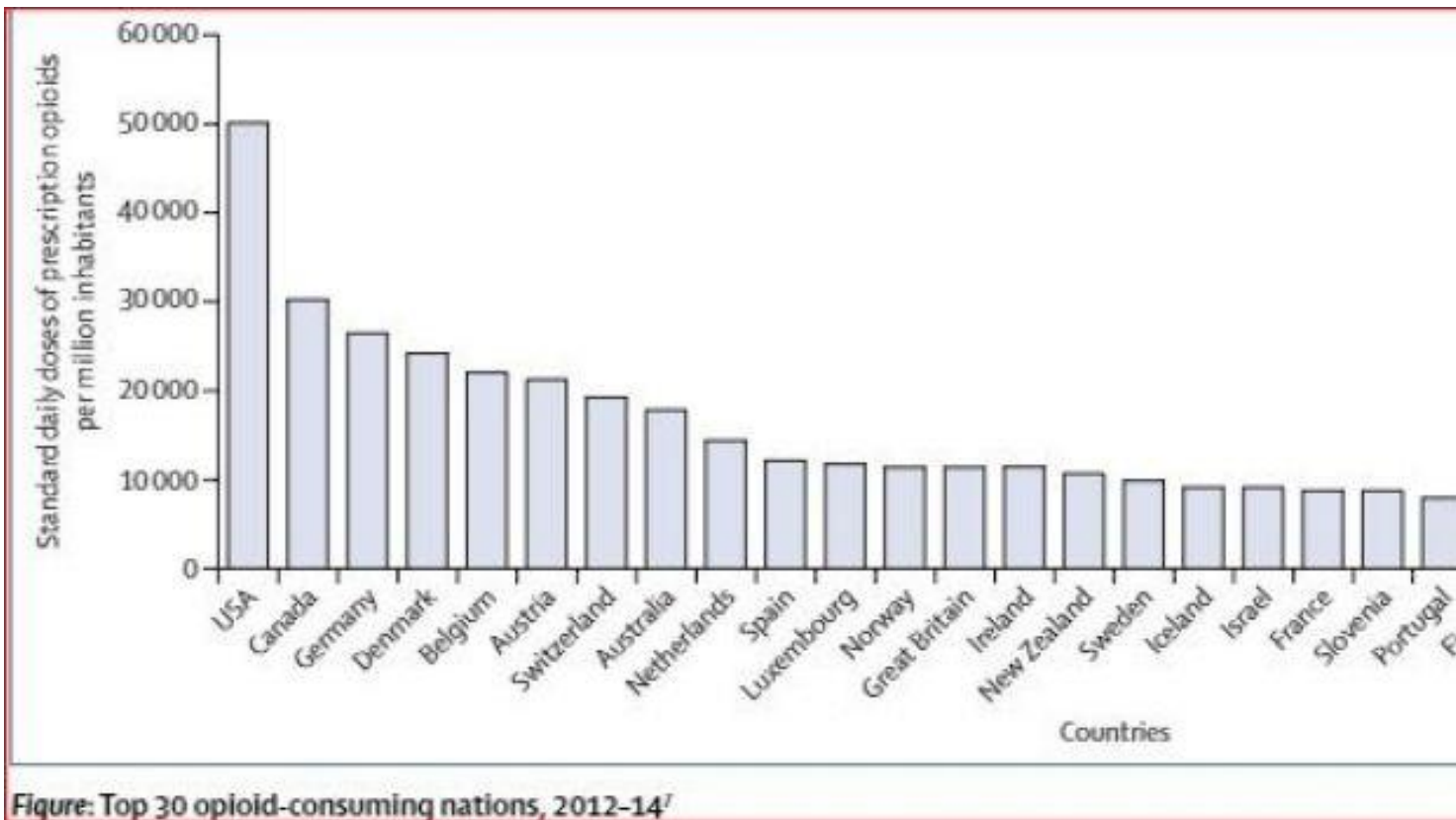
Chronic Pain Management

- An estimated 20 percent of adult Australians suffer chronic pain
- Injury is the most common cause of chronic pain (38%)
 - Including arthritis, musculoskeletal conditions, headaches, cancer-related pain, post surgical persistent pain and non-specific lower back pain
- Chronic pain is estimated to cost the Australian economy \$34.3 billion each year

Opioid Epidemic

- Prescription opioids are easier to obtain on the street than heroin
- Deaths from prescription opioids overdose are increasing and exceed those from heroin overdose
- The largest proportion of deaths occur among the 35-44 year age group (40 %) (ABS Figures)
- About 20 thousand doses per 1 million are prescribed daily

Top 30 Opioid Consuming Nations



- Australia ranks 8th among the world's top 30
- Top users are USA and Canada
- USA states where medicinal cannabis is legal average 23% less opioid abuse hospitalisation rates

Figure: Top 30 opioid-consuming nations, 2012-14⁷

Addiction

- 162–324 million people between 15-64 used an illicit substance in 2012, & ~183,000 deaths were thought to be drug related.
- Process of Addiction
- Initiated via exposure to opioids or other drugs
 - Mesolimbic Reward System
 - Dopamine release
 - Conditioned associations are formed in the brain
 - Repetitive use leads to Tolerance
 - Dependence —in order to avoid withdrawal symptoms
 - Addiction

How Can CBD Help

- CBD may have therapeutic properties on opioid, cocaine, and psychostimulant addiction, and possibly in cannabis and tobacco addiction
- Acts on several neurotransmission systems involved in addiction
- Attenuates reward facilitating properties of opioids
- Anxiolytic, antipsychotic, antidepressant, with neuroprotective properties
- Modulates psychoactive properties of THC
- An agonist of 5-HT_{1a} serotonergic receptors
- Regulates stress response and compulsive behaviours
- Modulates allosterically opioid receptors

Other interventions

- Reduce opioids prescribing
- Use cannabis preparations in management of chronic pain
- Psychosocial education
- Education
- Rehab centres

TGA Restrictions

- Maze of regulation requirements between Federal and State limits access & potential benefits
- Difficult access is making it impossible to fully take advantage of therapeutic benefits
- Major difficulty is dosing
 - Individual dosing
 - Starting low, going slow
 - Start with pure CBD, then moving slowly to low THC, high CBD ratios
- Legislation suggestions
 - Formulations of up to 5% THC and CBD over 10% should be available without restrictions
 - Then authority scripts if higher than 5% THC needed

“Marijuana in its natural form is one of the safest therapeutically active substances known to man” and “By any measure of rational analysis marijuana can be safely used within supervised routine medical care. To deny marijuana to patients who need it would be unreasonable, arbitrary and capricious”.

DEA Law Judge Francis Young 1988



MediHuanna

DOCTORS IN THE FIELD OF MEDICAL CANNABIS