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## MARIJUANA

### A DISCUSSION OF ISSUES

1. Traditionally most pharma companies conduct clinical trials under well defined conditions and with a control group that is given placebos. Generally, the main concern is the compound effective and are the side effects tolerable. This takes several years and costs a few hundred million dollars. Their study is conducted with a single defined molecule whose chemical structure is well know.
2. Marijuana can be obtained from cannabis plants from several species. Generally, it consists of an oil or extract from the seeds. It consists of a complex mixture of up to 140 different cannabinoid compounds.
3. The two most important of these are THC (tetrahydrocannabinol) and CBD(cannabidiol).
4. THC is the psychoactive compound which gives one a high. Plant extracts can contain 10-30% of this material. It is claimed to be helpful for nausea, pain of various types, post traumatic stress disorder (PTSD), epilepsy, anxiety, and has anti inflammatory properties. Smoking it has similarities to tobacco in that the smoke contains many cancer-causing compounds.
5. CBD is found in many cannabis plants but seems not to be psychoactive and is desirable for medical marijuana. It is reported to be helpful for anxiety, pain, childhood epilepsy, arthritis, nausea and menstrual cramps.
6. Many growers of marijuana tend to select plants that have a high THC level. However there seems to be no specification on what producers can offer but presents problems for users who do not know whether the product has high or low THC levels.
7. Important information for users would be the THC/CBD ratios because these seem to be useful to treat certain health issues. For medical marijuana a low THC would be desirable.
8. Hemp is a plant called cannabis sativa and its oil seeds produce only CBD with very low levels of THC. Hemp is a plant that is used for making rope, paper and is used for food in some countries. It can be grown legally in the US as long as the THC level is below 0.1 percent. CBD is not a controlled substance and can be purchased on line for low prices. This is the compound that is used in medical marijuana. Hemp oil contains up to 20% CBD and is the main source for medical marijuana uses.
9. Medical marijuana is legal in many jurisdictions such as Canada, 29 US states, Israel and the Netherlands as well as other jurisdictions. Israel has been a main source of research in the marijuana area and is encouraging its

farmers to grow the plant and export it. Non-medical uses are not permitted in Israel

10. I don't know what the THC/CBD ratios are in the product being sold in Canada or other jurisdictions. This is a missing piece of information that should be available to users. Some suppliers are advertising testing customers on different ratios to see what works best for them.
11. In Canada there is a medical cannabis product called Sativex which is an aerosol containing a 1/1 ratio of CBD to THC which is used in the treatment of multiple sclerosis.
12. It is estimated that about 10% of users eventually become dependent on products containing THC. CBD does not seem to cause people to become dependent and seems to be well tolerated at doses of 1.5 grams per day.
13. Marijuana is known to cause dizziness, and fatigue. Long term effects on memory and cognition are unknown.
14. There is evidence that marijuana has a negative effect on adolescents. The journal, *Proceeds of the National Academy of Sciences (USA)* in 2012 provides objective evidence of harm to the brain and cognitive functions. This is complicated today by the fact that genetically modified plants contain 10-30 % THC content. Traditionally marijuana plants have contained 4-7 % of the active compound THC. It would seem desirable to specify an upper limit for THC in the marijuana if it is sold and made available to the public. When spirits are sold the percentage of alcohol is stated on the bottle.
15. There are no roadside tests that are reliable for THC, the key active ingredient in marijuana. This presents a problem for law enforcement officers.
16. Like their ancestors many young and older people are not going to know anything about the THC/BDC ratios. They are Looking to expand the windows of their mind and remove themselves from the stresses of reality. Whether we should be legally encouraging them to do so will remain "a riddle wrapped up in an enigma" to quote Winston Churchill.
17. A well-balanced discussion of the issues surrounding marijuana and its uses can be found in the article: *World Psychiatry*, 15 (3), 195-204. 2016 by Dr. Robin M. Murray et al.

Regis Duffy, Dec 09, 2017

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