

Research Commentary by Dr Peter Gates

Just say 'know': How do cannabinoid concentrations influence users' estimates of cannabis potency and the amount they roll in joints? - A comment on Freeman and colleagues (2014)

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One of the common misconceptions surrounding the use and study of cannabis is the expectation that one plant will be similar to the next. In fact, the effects from smoking cannabis can differ significantly between plants and also can depend on what part of the cannabis plant is used and how it is prepared. This is because different plants and different parts of the same plant will have different concentrations of "cannabinoids". These are the naturally occurring constituents of the cannabis plant and around 100 different varieties have been identified. The most commonly referred to cannabinoid is delta-9-tetrahydrocannabinol, or THC. This is because THC is the most noticeably psychoactive cannabinoid. Interestingly another commonly referred to cannabinoid, cannabidiol, or CBD, has been shown to offset the impact of THC due to its anti-psychotic properties. Thus, the effects from smoking cannabis, or its potency, are determined by a complex interaction of cannabinoids.

Just as there is concern that smoking cannabis more frequently or in larger quantities may increase the risk of harm, there is also concern that smoking a more potent cigarette may also increase harms. However, some cannabis users claim to be able to identify the potency of their own cigarettes and avoid increased harms by 'titrating' their use. That is, they deliberately smoke less of a joint if they feel it may be particularly potent. Unfortunately, there is little evidence regarding whether cannabis users can accurately determine the potency of their cannabis cigarette or whether users do titrate their smoking appropriately.

Freeman and colleagues (2014) provide a recent investigation of 247 at least monthly cannabis users (mostly males in their early twenties) conducted in the participants' own home using their own cannabis. The participants were divided by those who smoked daily (n=95) and those who smoked on 1-24 days per month (n=152, referred to as "recreational users") and were tested prior to smoking and when "high". To complete the investigation the cannabis used was also tested for concentrations of THC and CBD.

The results showed that both daily and recreational users were able to identify plants with higher potency, although daily users' estimates were more accurate. That is, user ratings were positively - although modestly - associated with THC and negatively associated with CBD. In addition, the amount of cannabis added to their joints was negatively related to THC concentration (suggestive of titration) but was not associated with CBD content. In contrast, the participants did not successfully match concentrations of THC or CBD with their ratings of how 'stoned' they felt. Finally, the different cannabis plants provided by participants were seen to differ

significantly in concentrations of both THC and CBD.

These results are notable firstly because they identify the importance of experience. That is, the results suggest that inexperienced cannabis users may not be able to correctly identify the potency of the cannabis that they smoke and would therefore fail to titrate their use. Secondly, even the experienced daily cannabis users did not titrate their smoking based on changes in the quantity of CBD. Thus, the majority of individuals who use cannabis do not have a practical understanding of cannabis potency in terms of the impact of both THC and CBD. On the positive side, interest in research regarding the effects of the different cannabinoids is increasing and understanding of cannabis potency may soon increase. Ideally, any investigation of the impact of cannabis will consider not only the frequency and quantity of use, but also the route of administration (a topic for another day) and the type of cannabis used.

Freeman, T.P., Morgan, C.J., Hindocha, C., Schafer, G., Das, R.K., & Curran, H.V. (2014). Just say 'know': How do cannabinoid concentrations influence users' estimates of cannabis potency and the amount they roll in joints? *Addiction* 109, 1686-94.