

Study shows white matter damage caused by 'skunk-like' cannabis

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Credit: public domain

Smoking high potency 'skunk-like' cannabis can damage a crucial part of the brain responsible for communication between the two brain hemispheres, according to a new study by scientists from King's College London and Sapienza University of Rome.

Researchers have known for some time that long-term cannabis use increases the risk of psychosis, and recent evidence suggests that alterations in brain function and structure may be responsible for this

greater vulnerability. However, this new research, published today in *Psychological Medicine*, is the first to examine the effect of cannabis potency on brain structure.

Exploring the impact of cannabis potency is particularly important since today's high potency 'skunk-like' products have been shown to contain higher proportions of $\Delta 9$ -tetrahydrocannabinol (THC) than they did around a decade ago. In experimental studies THC has been shown to induce [psychotic symptoms](#) and 'skunk-like' products high in THC are now thought to be the most commonly used form of cannabis in the UK.

Dr Paola Dazzan, Reader in Neurobiology of Psychosis from the Institute of Psychiatry, Psychology & Neuroscience (IoPPN) at King's College London, and senior researcher on the study, said: 'We found that frequent use of high potency cannabis significantly affects the structure of white matter fibres in the brain, whether you have psychosis or not.'

'This reflects a sliding scale where the more cannabis you smoke and the higher the potency, the worse the damage will be.'

Diffusion Tensor Imaging (DTI), a Magnetic Resonance Imaging (MRI) technique, was used to examine white matter in the brains of 56 patients who had reported a first episode of psychosis at the South London and Maudsley NHS Foundation Trust (SLaM), as well as 43 healthy participants from the local community.

The researchers specifically examined the corpus callosum, the largest white matter structure in the brain, which is responsible for communication between the left and right hemispheres. White matter consists of large bundles of nerve cell projections (called axons), which connect different regions of the brain, enabling communication between them.

The corpus callosum is particularly rich in cannabinoid receptors, on which the THC content of cannabis acts.

The study found that frequent use of high potency cannabis was linked to significantly higher mean-diffusivity (MD), a marker of damage in white matter structure.

Dr Tiago Reis Marques, a senior research fellow from the IoPPN at King's College London, said: 'This [white matter](#) damage was significantly greater among heavy users of high potency cannabis than in occasional or low potency users, and was also independent of the presence of a psychotic disorder.'

Dr Dazzan added: 'There is an urgent need to educate health professionals, the public and policymakers about the risks involved with cannabis use.'

'As we have suggested previously, when assessing cannabis use it is extremely important to gather information on how often and what type of [cannabis](#) is being used. These details can help quantify the risk of mental health problems and increase awareness on the type of damage these substances can do to the [brain](#).'

Provided by King's College London

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