Cannabis extract helps reset brain function in psychosis

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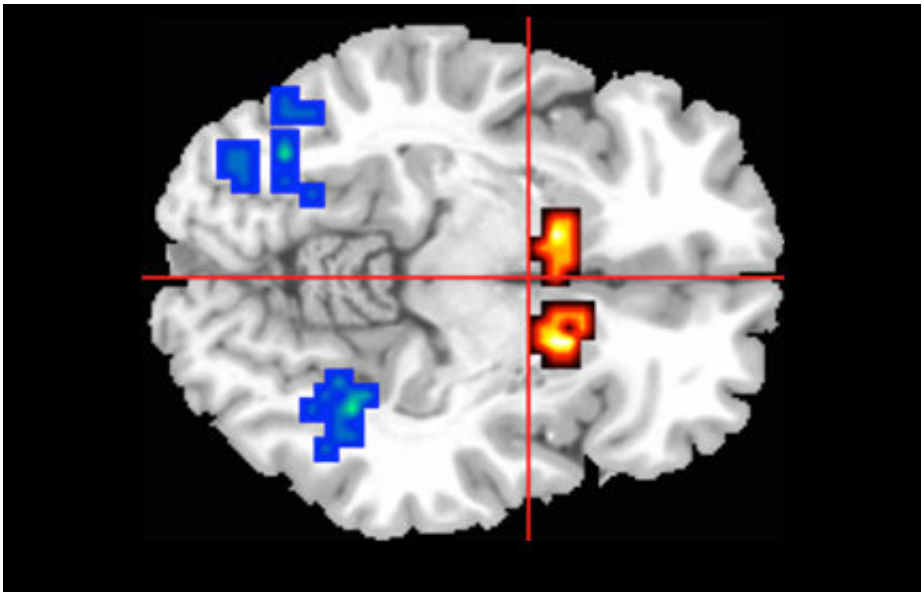

Red/yellow areas show activity in the caudate, a brain area affected in people with psychosis. Credit: King's College London

Research from King's College London has found that a single dose of the cannabis extract cannabidiol can help reduce brain function abnormalities seen in people with psychosis. Results from a new MRC-funded trial, published in *JAMA Psychiatry*, provide the first evidence of how cannabidiol acts in the brain to reduce psychotic symptoms.

Cannabidiol, also referred to as CBD, is a non-intoxicating compound found in cannabis. A purified form of cannabidiol has recently been

licensed in the USA as a treatment for rare childhood epilepsies, and a 2017 King's College London trial has demonstrated cannabidiol has anti-psychotic properties.

However, exactly how cannabidiol may work in the brain to alleviate psychosis has remained a mystery.

"The mainstay of current treatment for people with psychosis are drugs that were first discovered in the 1950s and unfortunately do not work for everyone," says Dr. Sagnik Bhattacharyya, from the Institute of Psychiatry, Psychology & Neuroscience (IoPPN). "Our results have started unravelling the brain mechanisms of a new drug that works in a completely different way to traditional anti-psychotics."

The researchers studied a group of 33 young people who had not yet been diagnosed with psychosis but who were experiencing distressing psychotic symptoms, along with 19 healthy controls. A single dose of cannabidiol was given to 16 participants while the other 17 received a placebo.

All participants were studied in an MRI scanner while performing a memory task which engages three regions of the brain known to be involved in psychosis.

As expected, the brain activity in the participants at risk of psychosis was abnormal compared to the healthy participants. However, among those who had cannabidiol, the abnormal brain activity was less severe than for those who received a placebo, suggesting cannabidiol can help re-adjust brain activity to normal levels.

The influence of cannabidiol on these three brain regions could underlie its therapeutic effects on psychotic symptoms.

Intriguingly, previous research from King's College London shows cannabidiol appears to work in opposition to tetrahydrocannabinol (THC); the ingredient in cannabis responsible for getting users high which has been strongly linked to the development of psychosis. THC can be thought of as mimicking some of the effects of psychosis, while cannabidiol has broadly opposite neurological and behavioural effects.

Dr. Bhattacharyya and colleagues at IoPPN are now launching the first large scale, multi-centre trial to investigate whether cannabidiol can be used to treat young people at high risk of developing psychosis. The trial is supported by a £1.85 million grant from an NIHR and MRC partnership.

Some estimates suggest that in England alone, over 15,000 people present with early symptoms of psychosis every year. Despite symptoms that can be extremely severe, there are currently no treatments that can be offered to patients at high risk of psychosis because current anti-psychotic drugs can have serious side-effects.

"There is an urgent need for a safe treatment for young people at risk of psychosis," says Dr. Bhattacharyya. "One of the main advantages of cannabidiol is that it is safe and seems to be very well tolerated, making it in some ways an ideal treatment. If successful, this trial will provide definitive proof of cannabidiol's role as an antipsychotic treatment and pave the way for use in the clinic."

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