Study: Cannabis has same effect on adolescents and adults, and CBD doesn't dampen effects

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The short-term effects of vaporized cannabis do not differ between adolescents and adults, while cannabidiol (CBD) does not dampen the

effects of the drug, finds a new study led by UCL and King's College London researchers.

For the experimental study published in *Addiction*, the researchers measured how regular cannabis users of different ages responded to inhaling cannabis with differing levels of CBD.

The study participants included 24 adolescents (16-17 years old) and 24 adults (26-29 years old), all of whom were already regular users of cannabis (0.5 to three days per week, averaging 1.5 days of cannabis use per week).

In a clinical research facility (Invicro), the participants inhaled three types of vaporized cannabis under close medical supervision. On three separate weeks, participants were given either a placebo, or a strain of cannabis high in delta-9-tetrahydocannabinol (THC, the main psychoactive component, which typically predominates in both illegal and legal markets), or a high-CBD and high-THC version (consisting of the same level of THC, and also containing CBD). These were administered in doses comparable to typical recreational use.

The participants were asked to report how the drug was affecting them at regular intervals, and completed tests assessing their verbal memory and the psychotic-like effects of the drug (such as delusions, cognitive disorganization or paranoia).

The researchers found all the expected effects of cannabis in the THC and THC+CBD conditions, among the participants' responses: feeling high, feeling anxious, having mild transient psychotic-like experiences, and memory impairment.

However, crucially there was no evidence that adolescents differed from adults in their responses to cannabis, while under the influence.

Lead author, psychology lecturer Dr. Will Lawn, who conducted the study at UCL before moving to King's College London, said, "Immediately following consumption, cannabis can elicit psychotic-like effects, and impair verbal memory, and adolescents in our study who regularly smoke cannabis were just as vulnerable to this as the adults were. Adolescence is a key developmental stage of life, when people are at an increased risk of developing mental health problems.

"Regularly producing transient psychotic-like effects and memory impairments through cannabis use is likely to augment the risk of psychological distress, especially in those who are vulnerable to these harms. However, critically, our results also indicate that 16- to 17-year-old cannabis users were not more sensitive to the acute harmful effects of cannabis than adults."

In recent years, there has been growing concern about the impact of cannabis on young people, as well as hope that CBD may protect against some cannabis harms. A recent long-term, observational study by the same authors found that adolescents are more vulnerable to cannabis addiction, compared to adult users, but they are not more vulnerable to depression and anxiety.

Cannabis has natural variation in CBD, which is a non-intoxicating constituent of the drug, as well as the relative levels of THC, which is psychoactive and gets people high.

CBD has rapidly grown as an over-the-counter wellness supplement in recent years, and previously CBD in cannabis had been thought to mitigate against some of the unpleasant effects of THC.

For the latest study, in testing the impact of differing CBD levels, the researchers found that CBD levels did not impact the subjective feel of the drug, and it also did not affect memory impairment or psychotic-like

effects.

The researchers say their study does not address high-dose CBD's potential medical benefits when administered by itself, but the findings do cast doubt on popular suggestions that these lower doses of CBD found in cannabis may protect against THC's acute effects on memory and psychotic-like experiences.

Dr. Lawn said, "Adding a moderate dose of vaporized CBD, about 25mg, to cannabis that is already high in THC does not alter the subjective experience, nor does it protect from effects such as paranoia or memory impairment. However, we have not investigated the long-term effects of low-dose CBD nor the therapeutic effects of high-dose pharmaceutical CBD here."

Senior author Professor Val Curran (UCL Clinical Psychopharmacology Unit, UCL Psychology & Language Sciences) commented, "Cannabis is the world's most commonly used internationally controlled drug. It is particularly popular among adolescents, with over 15% of 15-year-olds in England and 28% of those in the U.S. reporting usage in the last year. As cannabis laws are rapidly changing around the globe, it is vital that we understand whether the adolescent brain is more vulnerable, in order to inform regulations and accurate, evidence-based harm reduction messaging. Here, we have found that adolescents are neither more resilient nor more vulnerable to the immediate effects of cannabis."

The research formed part of the CannTeen study, involved researchers at UCL, King's College London, the University of Bath and Invicro llc, and received full ethical approval from the UCL Ethics Committee. As all participants were over 16 years old, everyone consented as a legal adult. All participants were already cannabis users and the study was completed safely without issues, with medical professionals present at all times.

The researchers say that strengths of this randomized, double-blind, placebo-controlled experiment are the tight experimental controls and that participants in the adult and adolescent groups were carefully matched on their natural cannabis use. The researchers caution that their study does not shed light on long-term impacts of cannabis.

For a 75kg person, the "THC" condition had 8mg of THC, and the "THC+CBD" condition had 8mg of THC + 24mg of CBD. This dose of THC reflects approximately one quarter of a joint, and a moderate dose of CBD that was thought might influence the drug's effects. The placebo consisted of a product using cannabis as the starting material, but with all cannabinoids (including THC and CBD) removed.

More information: The acute effects of cannabis with and without cannabidiol in adults and adolescents: a randomised, double-blind, placebo-controlled, crossover experiment, *Addiction* (2023). DOI: 10.1111/ADD.16154

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