LSD offers therapeutic benefits for mental disorders: groundbreaking research

Researchers studying the effects of LSD say the powerful drug has therapeutic potential for psychiatric disorders. For the first time, the effects of the consciousness-altering drug on the brain were studied using modern brain imaging technology.

University of Auckland School of Pharmacy researcher Dr Suresh Muthukumaraswamy was one of the principal authors of the study alongside scientists in the United Kingdom, Brazil, Germany and Canada.

Members of the family psilocybe, commonly known as magic mushrooms, contain hallucinogenic compounds that cause LSD-like effects.

The study was carried out at the University of Cardiff, where Muthukumaraswamy was working before he returned to Auckland.

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The study sought to examine the effects of the drug on brain activity using modern neuro-imaging techniques to build a picture of the mind affected by a psychoactive compound.

It marked the first time scientists tried to map the brain under the influence of LSD.

Subjects were given a dose of the drug then their brains were scanned.

Results showed changes in brain blood flow, electrical activity and communication pathways within the brain that mirrored the drug’s hallucinatory and consciousness altering properties.

Most significantly, psychedelics have the potential for use in breaking down the pathologically rigid behaviours associated with many psychiatric disorders, the study says.

Researchers sought to investigate the brain effects of 75mcg of LSD on 20 healthy volunteers in a placebo-controlled experiment over two weeks.

Brain activity was monitored during rest, when participants’ eyes were closed and they were not performing tasks.

Muthukumaraswamy said the dosage was roughly equivalent to one tab of acid.

The legal and regulatory requirements to arrange the study were rigorous and the subjects were carefully screened and evaluated for suitability before the experiment.

He said LSD (lysergic acid diethylamide) may be unique among mind-altering psychedelic substances.

The study was a challenge and the subjects were not always compliant when they were under the influence.

Participants were asked questions and all study volunteers reported hallucinating with eyes closed.

Amid growing interest in the potential therapeutic use of the drug, such studies offer insights into how pathological states could be modelled and, potentially, treated.

"The present study sheds new light on the relationship between changes in spontaneous brain activity and psychedelic-influenced visual hallucinations.

"Similarities between aspects of psychosis and the psychedelic state have long been debated, and one of the most influential hypotheses on the neurobiology of schizophrenia proposes a functional disconnect between certain brain structures in the disorder.

"It seems increasingly evident that psychedelics reduce the stability and integrity of well-established brain networks.

"[As] evidence supporting the therapeutic potential of psychedelics mounts so does our need to better understand how these drugs work on the brain.

"In many psychiatric disorders, the brain may be viewed as having become entrenched in pathology, such that core behaviours become automated and rigid."
"[Psychedelics] may work to break down such disorders by dismantling the patterns of activity on which they rest."

LSD was first synthesised in 1938 and had a major influence on psychiatry and psychology until an increase in recreational use during the 1960s led to reclassification as a prohibited drug.

"As a consequence human research with LSD has been on pause for half a century.

"However, inspired by a revival of research with other psychedelics, such as psilocybin and ayahuasca, a small number of new reports on the psychological effects have recently been published," the research said.

"LSD produces profound, sometimes life-changing experiences in microgram doses, making it a particularly powerful scientific tool."

The study was published in the Proceedings of the National Academy of Science.

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