

Hallucinogen research inspires “neurotheology”

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Psilocybe semilanceata mushrooms have hallucinogenic effects when eaten

For psychedelic research around the world see <http://www.maps.org/research>

For press release see http://www.hopkinsmedicine.org/Press_releases/2006/Griffithspsilocybin.html

For Halpern and colleagues study see *Neurology* 2006; 66: 1920–22

For decades, the benefits of psychedelic drugs have mostly been explored through individual experimentation. Whether these hallucinogens can induce true mystical experiences has been debated. In a landmark paper, US researchers now report that psilocybin, the active compound in “magic mushrooms”, induced mystical experiences identical to other reported mystical states in more than 60% of participants (*Psychopharmacology* 2006; published online July 7. DOI:10.1007/s00213-006-0457-5). Moreover, after 2 months, 79% of participants reported enhanced well-being. So what has prompted these investigations and how might such substances improve health?

“In the 1950s and 1960s, basic science and applied research studies were taking place with hallucinogens, offering hints that they might be of value in psychotherapy, addiction treatment, and creativity enhancement, and suggestions that the hallucinogens can occasion mystical-type experiences. Laws enacted in response to excesses of the ‘psychedelic 1960s’ stopped almost all that work, leaving some promising threads dangling”, notes lead author Roland Griffiths (Johns Hopkins University School of Medicine, Baltimore, USA).

John Halpern (Harvard Medical School and McLean Hospital, Belmont, USA), who is instigating studies on psilocybin and LSD for cluster headaches with

study lead Andrew Sewell, says the “temperature of the day” is insufficient to wholly preclude research. “Many years of hard groundwork have set the stage for the carefully crafted studies now being reported on. Such research could always have been performed but it is up to investigators to initiate such work and to justify that the potential benefits may outweigh risks.”

The mechanisms and potential benefits of hallucinogens are being studied worldwide. Whether these benefits are due to psychopharmacological action, induced psychological changes, or both is unclear.

Halpern and colleagues did a questionnaire study of 53 people taking psilocybin or LSD for cluster headaches. Although Halpern says that speculation on mechanisms is premature before efficacy studies are done, 22 of the 53 patients reported partial or complete efficacy from subhallucinogenic doses. If proven in rigorous studies, such efficacy might lie in the serotonergic action that characterises most hallucinogens.

For addiction, Griffiths notes that “Twelve-Step programmes such as Alcoholics Anonymous rely on spiritual transformation”. Both Evgeny Krupitsky (St Petersburg State Pavlov Medical University, Russia), who showed that ketamine promotes abstinence in alcoholics and heroin addicts, and Deborah Mash (University of Miami, Florida, USA), who treats various addictions with ibogaine, believe that pharmacology and psychology are important in recovery. Krupitsky explains: “Some effects on craving seem to be related to the direct pharmacological effect of ketamine on the NMDA receptor, and some others (changes in the life values, life purpose, in the meaning of life, and sometimes even in world view) are probably related to the nature of the peak psychedelic experience.”

Mash explains that “ibogaine helps an addict rewrite his or her own mythology [so] we have actually

tried to capture the spiritual effect of ibogaine as an intervention. This is done with the help of good therapists, but it is not enough.” She points out that the metabolite noribogaine acts on brain systems to ameliorate craving, whereas other hallucinogens, which do not have such activity, such as peyote, in themselves may be insufficient to treat addiction. However, Halpern and Sewell are aiming to examine the effects of peyote on recovery from alcoholism, when taken in the prayer ceremony of the Native American Church.

“Another possible application stems from the observation that spirituality may influence psychological coping in the face of advanced illness, and psilocybin may be protective against anxiety and depression, which are often associated with such illness”, says Griffiths. A protocol being planned at Johns Hopkins will investigate psilocybin for cancer patients with diagnosis-related depression or anxiety, while Halpern’s study of MDMA-assisted psychotherapy for advanced-stage cancer patients with diagnosis-associated anxiety has all necessary governmental approvals.

Ultimately, study of hallucinogens may reveal that psychopharmacology underpins these potentially transformative experiences. Solomon Snyder of Johns Hopkins comments on the *Psychopharmacology* paper: “[By] showing that one can responsibly conduct clinical research with psychedelic drugs and by confirming the mystical influences of these agents, Griffiths et al may help resurrect psychedelic drugs as major tools in probing the molecular bases of consciousness”. Further, he notes that serotonin, discovered via LSD studies, may underpin the integration of sensory perception, so changes in serotonin systems could be related to the ego-transcendence that occurs in mystical experiences.

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