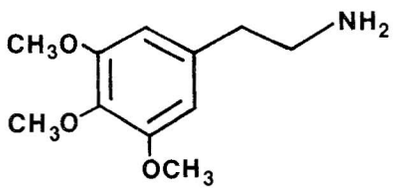
Profiles of Psychedelic Drugs



7. MESCALINE

Description and Properties: Mescaline, 3,4,5-trimethoxyphenethylamine, is a white, carbon dioxide absorbing solid (m.p. 36°) that is soluble in water and alcohol, but surprisingly insoluble in ether. Its hydrochloride salt has a m.p. 181° and the sulfate dihydrate salt forms relatively water-insoluble white needles with a m.p. over a three degree range including 186°.

History: Peyote is the common name for the small dumpling cactus *Anhalonium lewinii* (also *Lophophora williamsii*) which has been used for centuries in northern Mexico and the southwestern United States as an intoxicant in religious services. The presence of alkaloids in the plant was first noted in 1886. Mescaline was isolated and characterized from these alkaloids in 1896 and synthesized in 1919. The peyote cactus is now known to contain over 50 alkaloids, mostly phenethylamines and tetrahydroisoquinolines, but although several of these are pharmacologically active, it is currently believed that mescaline is the major if not sole contributor to the action of the natural plant. Mescaline has also been reported as the major component of the Peruvian cacti San Pedro (*Trichocereus pachanoi*) and *T. peruvianus* and is a trace component of another dozen South American cacti.

Biochemistry and Pharmacology: Mescaline is one of the most thoroughly studied psychedelic drugs from the metabolic and biochemical viewpoint. It is unusual among the intrinsically active phenethylamines in that it is not deaminated by the usual enzyme monoamine-oxidase, but is converted in humans, nonetheless, to the inactive 3,4,5-trimethoxyphenylacetic acid. Minor metabolites include several demethylated phenols that are structurally related to intermediates in the metabolism of dopamine and norepinephrine, but it has not yet been chemically connected with these neurotransmitters. The body has the enzymatic capability of synthesizing mescaline from these demethylated products, but there is no evidence that they occur naturally in humans. Studies with the radioactive drug indicate that there is extensive protein binding and that there is residual activity firmly associated with certain body tissues.

Human Psychopharmacology: The usual dosage of mescaline in humans is between 300 and 500 mg of the sulfate salt administered either orally or parenterally. The peyote button equivalent is between five and 15 dried cactus tops, depending upon size and potency. Nausea and occasional diarrhea are frequently the first indications of the drug's activity and rarely persist beyond the first hour following ingestion. During the next two to three hours, there is the development of a sensory responsiveness, largely expressed by color enhancement and imagery of many sorts. A benign attitude is taken towards nature with the user experiencing feelings of benevolent and comfortable acceptance of sounds, images, animals and inanimate objects. Imagery can be fanciful and visual interpretations can assume profound significance. From the fifth to the eighth hour, there is a gentle recovery that allows personal integration of these stimuli into a peaceful and restful state of mind. There is an excellent recall of the experience and it is usually held to be of great personal value. There is rarely any sleep disturbance or any tiredness the following day.

Legal Status: Mescaline is listed in the Federal Controlled Substances Act as a Schedule I drug with a registry number 7381.

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