

FLY AGARIC: AN EXOTIC TOADSTOOL TRIP

Alice in Wonderland knew
what she was doing, all right

BY JOAN AREHART-TREICHEL

The crimson-capped mushroom *Amanita muscaria* (alias fly agaric) has had a long and colorful history as a mind-altering drug. The ancient Hindus used it for mind expansion. When Alice in Wonderland nibbled on it, it made her shrink, then grow large. And from earliest times to the 20th century, the Siberians ate it to help them pass the long, dark Arctic nights. In fact, since it cost one reindeer to purchase four mushrooms brought by dogsled from southern forests, the Siberians drank their own urine after fly agaric consumption in order to prolong the drug trip. They even shared this urine with friends, such as modern pot smokers might share a joint.

However esoteric such drug trips, 20th-century scientists have confirmed that they are possible. W. Scott Chilton, a fly agaric investigator and chemist at the University of Washington, reports. Fly agaric, he says, contains a compound that could give the Hindus and Siberians a feeling of disorientation, and Alice the symptoms of microspia and macropsia. What's more, the compound also breaks down in the body in such a fashion that one could well get a second trip by drinking one's own urine after consuming the mushroom.

Contrary to the widespread belief of many toadstool fanciers and chroniclers, the primary hallucinogenic compound in fly agaric is not muscarine, but ibotenic acid, Chilton says. Muscarine was isolated in an extremely small amount in 1869. Even early crude preparations failed to produce mind-altering effects. By the turn of the century, it was clear that mu-



Four fly agaric "trippers" all in a row—and thriving in North Carolina.

scarine causes sweating, salivation and tear formation, but not alteration of the psychic processes. Then during the 1960's Conrad H. Eugster of the University of Zurich, Switzerland, Karl Bowden and A.C. Drysdale of Smith, Kline and French Research Institute in Britain and T. Take-moto of the University of Tohoku, Sendai, Japan, isolated, independently of each other, another chemical from the mushroom. It was ibotenic acid. Chilton and his colleagues have shown, during the past two years or so in experiments on both animals and themselves, that this chemical is responsible for the mushroom's hallucinogenic effects—dizziness, disorientation, drunkenness, followed by a drugged sleep. Or as Chilton recalls from his own self-induced intoxication:

"I drank 93 milligrams (1/300 ounce of crystalline ibotenic acid dissolved in a cup of cold water at 10 a.m. Ibotenic acid has an unusual aftertaste which persists for half an hour to an hour. At 11:30 a.m. I still felt normal except that I had a slight tendency to wobble while walking. By 1:30 p.m., I began feeling pressed down by a great weight, and my body felt foreshortened. By 2 p.m., my field of vision began to rotate slowly and sometimes slide right, left, up or down. I was dominated by ever-increasing disequilibrium, although I never did lose control of my intellectual processes as happens in alcohol intoxication. I sank into a heavy drugged sleep until 7 p.m., when I stirred briefly, feeling somewhat cleared. At 8 p.m., I awakened for good. My dizziness gradually disappeared, and all my sensations were normal by 9:30 p.m."

The ability to get a second mind-altering trip by drinking one's urine after eating the mushroom, Chilton and his co-workers have found from chemical analysis of animal and human urine, is the result of ibotenic acid being converted into the chemical muscimol, which is about eight times more pharmacologically active than ibotenic acid. "What it looks like," Chilton explains, "is that upon eating ibotenic acid, as little as 10 percent of it is converted to muscimol. That 10 percent is used by the body, and the other 90 percent passes through the urine for the next user."

Why can ibotenic acid and muscimol produce hallucinogenic effects? "Possibly by mimicking neurotransmitters in the brain," Chilton replies. "For instance, muscimol can mimic the natural brain neurotransmitter gamma-aminobutyric acid (GABA) in its nerve-firing effects, Graham A.R. Johnston, a pharmacologist at the Australian National University, in Canberra, has found."

In the event you're thinking about "flying" fly agaric, you might reconsider. It can also produce toxic effects such as nausea and muscle spasms. In fact, fly agaric has caused two deaths in the United States. One occurred in the state of Washington in 1934. The other happened in Washington, D.C., in 1897, when an Italian count stuffed himself on a bowl of fly agarics, thinking that they were Caesar's mushrooms. "In fact, even for its psychic effects," Chilton says, "I wouldn't recommend this mushroom. My experiences have been somewhat negative, that is, not really all that pleasant." □