Short Communications

IMPURITIES IN STREET PHENCYCLIDINE

As indicated by several recent reports, (Reed & Kane 1972; Munch 1974; Rainey & Crowder 1974) the clinical picture presented by phencyclidine (PCP) intoxicated patients is markedly variable, ranging from mild confusion to active hallucination and unawareness of surroundings. Indeed, several deaths have been associated with PCP ingestion (Reynolds 1971; Reed, Cravey & Sedgwick 1972; Kessler *et al.* 1974; Eastman & Cohen 1975).

As an example of the recent literature discussing impurities in PCP, a letter to the editor of the New England Journal of Medicine (Rainey & Crowder 1974) suggested that these impurities – a possible consequence of sub-standard, illicit syntheses – are more toxic than PCP itself. It would be tempting to ascribe differences in clinical presentation to the presence of synthetic starting or by-products. Unfortunately, there is no evidence to support the suggestion that impurities in street PCP are toxic.

Reports noting any such toxicity cite a STASH article (Lampe 1971 pp. 5,8). In a discussion of PCP impurities, the following statement was made: "In addition, mis-syntheses of PCP may have also been responsible for coma: in Ann Arbor, Drug Help has seen two cases of respiratory depression after taking a compound believed to be PCP; in both cases, the subjects had consumed significant amounts of alcohol in addition to the PCP." Obviously, this type of statement should not be used as a basis for reporting the toxic effects of PCP impurities.

One scientific report concerning PCP impurities (Costello 1974) unambiguously identified phenylcyclohexene as a "frequent" contaminant of street PCP. The frequency of occurrence of this contaminant is probably variable, depending on the synthetic route employed and the sophistication of the illicit manufacturer. When cyclohexanone inadvertently comes into contact with phenylmagnesium bromide, phenylcyclohexene is a predictable contaminant. Our laboratory work has shown that the thermal degradation of the hydrochloride salt of PCP yields phenylcyclohexene. Unfortunately, there are no reports on the toxicity of phenylcyclohexene, either alone or in combination with PCP. Phenylcyclohexene is reported to be a minor urinary metabolite of PCP in the Rh monkey (Ober *et al.* 1963).

At present there are no data concerning the effect on any impurities in street PCP, despite their potential clinical importance.

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THE ALASKAN AMANITA QUEST

Alaska has recently been the focus of much attention in the news media due to not only the Alyeska trans-Alaska pipeline project but also to the case of Ravin v State. In that test case, the Alaskan Supreme Court recognized that citizens' privacy includes the right to grow and use *Cannabis* in their homes. Little is heard,

however, of the nonmedical use of other psychotropic drugs in Alaska.

While driving through the Yukon at the end of August, I was especially impressed by the tremendous variety of fungal growth. I observed over twenty-five species of mushrooms on a single jaunt through the roadside forest, but I did not find any hallucinogenic species. Since psilocybian fungi have not been reported from Alaska, I wondered whether I would encounter any.

I was destined to have quite a surprise! Although at least one latent psilocybin species of the genus *Panaeolus* has turned up in Alaska, most people do not seem to have noticed its presence. Around Anchorage, however, young enthusiasts have been employing another type of hallucinogenic mushroom, the fly agaric *Amanita muscaria,* for about two years. Both the red and yellow varieties are widespread in Alaskan conifer and birch forests. As in northern California, Oregon, Washington and British Columbia where the red variety of *A. muscaria* is now widely employed as an intoxicant, it seems that people around Anchorage first learned of the reputation of this mushroom from Wasson's *Soma: Divine Mushroom of Immortality.* Despite a warning in *Know Alaska's Mushrooms* to not taste this poisonous species, various methods of preparation were tried by eager mycophils. Parboiling with subsequent discarding of the water was found to be rather ineffective as the active constituents concentrated mainly in the colored cuticular layer of the cap are readily extracted into boiling water. Oven drying with the door slightly open has been found to be very effective for preservation, but the material is generally without effect when smoked. Since *Amanitas* are mycorrhizal, that is they live in symbiosis with the roots of certain deciduous and coniferous trees, their fruiting bodies may occur wherever these trees recently lived. Thus there are reports that *A. muscaria* has been seen in downtown Anchorage!

My co-traveler and I decided to have a trial of this fascinating fungus. The first day of foraging north of Anchorage yielded only a few small buttons, but we collected a large supply of delicious wild raspberries. The second day, however, brought good tidings southeast of the city. Within two hours Frank and I had collected several pounds of *A. muscaria.* How stately and picturesque these mushrooms are! Pileus color ranged from bright red and intense orange to soft yellow and the amount of white warts was quite variable. In some cases the warts had been almost entirely washed off by rain. Some specimens were almost eight inches in pileus diameter, and all were checked for the presence of a superior annulus and lacerate volvar remains.

When we returned to a friend's residence, we boiled six caps of various dimensions. Frank consumed two in his mushroom soup and I ate four (the usual dose being one to four caps). The taste was somewhat like chicken. Curiously, I became nauseated within minutes but the feeling was fleeting. Within a half hour I noticed many peculiar effects. Audition became enhanced and synesthesias became prominent with multi-modality overflow. I began to taste odors, to smell tastes, and even to hear odors and tastes. Visual disturbances were almost nonexistent, but I noticed frequent recurrent gustatory, olfactory and auditory flashes. Tactile sensation became markedly enhanced. Occasional moments of nausea occurred during the first two hours of the experience, but then the pseudodelirium settled into a profound euphoric state of consciousness. Equilibrium was affected as by ethyl alcohol throughout the intoxication, but mentation in contrast remained unimpaired. After six hours, although still under the *Amanita* influence, I retired for a night of sound sleep. Frank experienced a state of wellbeing and restfulness without any nausea. He felt a sharpening of auditory, gustatory and tactile sensations. While taking a shower during the evening, Frank seemed to taste cleanliness and he later slept well.

A few days later we again tempted our fate but with dried *Amanitas.* I ate four caps and Frank consumed three. Each of us experienced a pleasant intoxication with only mild sensory alterations including subtle echo patterns. Frank did feel nauseated, however, for the first half hour, but the predominant effect afterwards was induction of euphoria. A nonintoxicated observer noticed no distinctive changes in our behavior.

The principal psychoactive constituents of the red, yellow and rare white varieties of *A. muscaria* are the amino acid ibotenic acid and its pharmacologically more active decarboxylation product, muscimol. Intoxications from *A. muscaria* are rarely serious. Atropine used to be indicated for therapy because the toxic effects of *A. muscaria* were once attributed to the small amounts of muscarine, a classic parasympathomimetic drug. Since ibotenic acid and muscimol may exert atropine-like effects, atropine is actually contraindicated in the management of toxic reactions to the fly agaric even though some muscarinic-type symptoms such as water salivation and mild abnormal cramping may occur during the intoxication. Therefore therapy should be primarily supportive. Poisonings due to certain species of *Inocybe* and *Clitocybe* which contain significant amounts of muscarine are well managed with atropine.

A. pantherina, a springtime species common around

Fairbanks, also contains ibotenic acid and muscimol (in addition to some novel compounds of unknown pharmacology) and is more potent than *A. muscaria.* Its use as an hallucinogen is growing in Oregon, Washington and British Columbia, but it is strongly implicated in numerous serious mycetism cases in the Puget Sound area and is in need of detailed interdisciplinary study. There is speculation with a little evidence that *A. pantherina* hybridizes with *Amanita gemmata,* and strains may vary greatly in their toxicity. One would be far wiser to experiment with *A. muscaria* rather than *A. pantherina* until more is known about the latter.

Mycophagists must be very cautious in selecting any *Amanitas* for use since the survival rate after eating species such as *A. bisporigera, phalloides, verna* and *virosa* is about 50 percent even with the best medical treatment!

Despite possible geographic variations in potency, the red variety of *A. muscaria* is now generally regarded to be psychoactive. The yellow variety has a reputation of being weak at best, but it is definitely psychoactive in Alaska and the Pacific Northwest. Since *A. muscaria* is common worldwide, its use is expected to increase as more and more people become aware of its properties. Because of this general trend, it is important to initiate medical investigation into the effects of chronic use of such psychoactive substances.

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