MIND FOUNDATION

Psilocybin chronicles

DATE PUBLISHED

10 October 2019



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Have humans consumed neurotropic mushrooms since ancient pre-historic times, or is it a relatively newly developed practice? If the former is true, what role did these altered states of consciousness play in ancient human times? These questions are continuously debated amongst anthropologists, scientists, and ethnomycologists.

Fungi – mushrooms – magic mushrooms?

Before delving into the discussion, it is important to understand the basics of mushroom anatomy, lifespan, and habitat. The term “mushroom” only refers to the fungus’s fruiting body, the one we can observe above-ground with the naked eye. Underneath the surface lies a network of so-called hyphae, long filaments branching of the mushroom body, collectively forming the fungus’s mycelium, which is needed for proliferation and nutrient uptake. Mycelium can be enormous: one of the largest ever found is a single *Armillaria bulbosa* that stretches across 15 hectares and weighs 10.000 kg. This particular fungus, which was found in the United States, is suspected to be about 1500 years old.1

Interestingly, the presence of mushrooms in a given habitat says a lot about its surrounding ecosystem. According to mycologist Paul Stamets, the presence of mushrooms is actually a direct index of a healthy and biodynamic ecosystem. Nevertheless, it is also well known that specifically some psilocybin species tend to grow in ‘disturbed’ habitats.2

As can be seen, these organisms are truly astonishing. For this reason, fungi of all kinds have fascinated writers, poets, artists, musicians, scientists, and more recently archaeologists and anthropologists.

When talking about psychoactive fungi, two species are most important: On the one hand, species that contain ibotenic acid and, on the other hand, species that contain psilocybin and related indole molecules. Scientists have discovered 209 species until now that fall into these two categories.3 This blog post covers the ins and outs of both these types of psychoactive fungi.

Ancient human use of amanita muscaria

The first mushroom considered to be the most used in ancient human history to experience an altered state of consciousness is the spectacular red-orange *Amanita Muscaria*, the 'fly-agaric' (Pic. 1). Finnish botanist Harri Nyberg, PhD, argues that the ancient use of the fly-agaric played an important role in the origins of Siberian shamanism. *IN 'DISTURBED' HABITATS.*

In western Siberia, ingestion was restricted to shamans. In contrast, in eastern Siberia both shamans and laypeople would use the mushroom religiously and recreationally – entertaining themselves during long and dark Siberian winter nights.4 Indicative of these entheogenic uses of psychoactive mushrooms, archaeologists found fungoid petroglyphs (rock carvings) on large exposed rock formations in the Pegtymel River region in eastern Siberia, which are apparently of shamanistic significance.5

Beyond Siberia, there is also evidence suggesting that Vikings and other civilizations used these fungi.6 Supposedly, their use gave birth to stories and myths like the one of Santa Claus.7

As the culture around the use of Amanita differed between civilizations, so did the mode of administration. In the 1700s, German botanist Georg Wilhelm Steller proposed that reindeer were likely ingesting the fly-agaric, ultimately rendering their flesh intoxicating when consumed by other animals or humans. Yet, traditionally two other methods of consumption of the fly-agaric are commonly assumed.

Sometimes, the mushroom was consumed as an ointment, typically applied to mucosal membranes like genitalia or the anus with a stick (usually a broomstick – some see this as an analogy to witchery). Alternatively, as unpleasant as it sounds, often people would drink the urine of someone who ate Amanita. In this latter case, the eater was usually a shaman, who would fast for the preceding three days to increase the purity of their urine.8 The purpose of processing the *Amanita* fungus in this way may have been to increase the psychoactive effects and to minimize toxic side effects for the end consumer. The main alkaloid in fly-agaric is ibotenic acid, which is toxic but only mildly psychoactive. After consumption, ibotenic acid is metabolized to form muscimol, which is readily passed into the urine. Muscimol is much less toxic and is mainly responsible for the psychological effects of *Amanita*.9

Ancient use of psilocybin-containing mushrooms

The *Psilocybe* genus represents the second broad group of psychoactive mushrooms. In this genus, *Psilocybe semilanceata* is one of the most commonly used psychoactive mushrooms in Europe today (Pic.2). The earliest unequivocal written evidence for human usage of this mushroom is from the 18thcentury. Namely, in 1799 the chemist Augustus Everard Brande documented *Psilocybe semilanceata* intoxication in a British family which prepared a meal with mushrooms they picked in London's Green Park.10 The father and four children experienced typical symptoms associated with ingestion: pupil dilatation, spontaneous laugher, and hallucinations. Based on this rather recent first evidence of consumption, some authors contest the possibility of ancient human use of psilocybin worldwide. However, many also cite archeological findings of cave art to

argue that humans did consume psilocybin-containing mushrooms. These artifacts are our main source of information about the potential use of psychoactive plants far back in time.

Already in the 1950s, cave art possibly depicting psilocybin-containing mushrooms was discovered at Tassili n'Aijjer, Algeria.5 The Tassili n'Ajjer mountain region in the Algerian part of the Sahara Desert houses is considered the oldest pre-historic evidence for the use of psychotropic mushrooms by humans, dating to 9000-7000 B.C.E. In one of the cave paintings, the humanoid figures are dancing or running and carrying mushrooms connected to their heads, potentially indicating the influence of the psychotropic substances on their minds.11 Some believe that the mushroom portrayed in this Algerian cave art is *Psilocybe mairei,* which is known to grow in North Africa.11,12

Another more recent mushroom art piece can be found in one of the reliefs on the bronze doors at the Hildesheim Cathedral in Germany. This piece from the Middle Ages depicts a scene in which God reprimands Adam and Eve for eating parts of the tree of knowledge in the Garden of Eden. Chemist and mycologist Jochen Gartz, PhD, thinks that the tree might be a representation of *Psilocybe semilanceata*.12

The most recent archaeological discovery of murals containing bulls and fungoid pictographs was in 1918 at Selva Pascuala, Spain (Pic. 4). This joint presentation of bulls and fungi is considered to be related to the manure habitat of some coprophilic (growing in dung or fecal matter) species of the*Psilocybe* genus. The paintings have been linked to the Spanish Levantine culture, which is known for its magical and ritual depictions, and some speculate that *Psilocybe hispanica* is the species depicted in these pictographs.5

It is believed that up to 20 different *Psilocybe* species were used in rituals in Mexico,11 which were often depicted in ceramic sculptures, leaving us an artistic legacy to admire. Most of these artifacts originate from what is nowadays Northwest Mexico and date back to the classic and pre-classic Mayan era more than 2000 years ago.13,14

Even in Ancient Greece, humans are suspected of having ingested psilocybin mushrooms. For instance, it is known that the participants of the secretive Eleusinian rites were using mind-altering substances.12,15 However, it is still not determined whether they actually used psilocybin-containing mushrooms. In support of the hypothesis that they did, archaeologists found clues in Farsala in a relief carving dating back to the 5th century BC.15 The carving depicts two Eleusian goddesses holding mushrooms which, according to some historians, may be either *Claviceps purpurea*17 or of a *Psilocybe*species.12

The many discoveries of apparently mushroom-depicting art lend some support to theories on pre-historic use of psychotropic fungi in many regions. But did pre-historic humans in all these regions of the world actually seek out ways to alter their minds – and if yes, why? These are questions that yet remain unanswered.

The two big Renaissance movements

If psilocybin consumption was as widespread and dates back as far as the cave-art seems to indicate, an astonishingly large gap of usage occurred in human history. Mycologist Paul Stamets and anthropologist Jerry Brown, PhD, author of "Psychedelic Gospels," both argue that the spread of Christianity in Europe and the Black Plague played a role in this gap in history.2,18

They state that since the bible advises its followers to be sober-minded and watchful to be considered good Christians, ingesting mushrooms for the purpose of experiencing God was not embraced by the Church. The inquisition, with the purpose to combat heresy, may have been the tool for stopping mind-altering substance use.18

However, we do not know whether people in Christianized regions actually used psychoactive mushrooms. Moreover, even if they did, the spread of Christianity and the period of Inquisition alone may not sufficiently explain the cessation of psychoactive mushroom use.

The first Renaissance

In 1938, the ethnobotanist Richard Evans Schultes observed a mushroom ceremony in Oaxaca, Mexico.19- Subsequently, he published a leaflet describing his observation for the Harvard University Botanical Museum. Following this, one of the first outsiders who took part in such a ceremony was R. Gordon Wasson20, a mycologist who traveled to Central Mexico to meet the shaman Maria Sabina in 1955. Wasson's experience and reports about it arguably played a key role in popularizing psychoactive mushrooms in the US.

The next phase of the first renaissance of psilocybin use was catalyzed by the hippie movement in the US, starting in the early 1960s, which eventually spread around the world. The core of the movement focused around harmony with nature, communal living, artistic experimentation, and the widespread use of recreational substances – psilocybin mushrooms being only one of them. In parallel, there was a first wave of scientific research into the effects of psychoactive mushrooms. However, by the end of the decade, psychedelic drugs were illegalized and research on them was effectively halted.

The second Renaissance

The second renaissance of psychedelic research is taking place right now and is focused on the medicalization and, in some places, on the decriminalization of psilocybin. Scientists are now revitalizing the research that had ceased at the end of the first renaissance.

The problems faced by previous scientists still come up today – due to psilocybin's legal status, researchers must clear a number of regulatory hurdles to acquire official approval for studies on psilocybin. Many governmental authorities have only become more open to such research in recent years – perhaps in part, because organizations like the Multidisciplinary Association for Psychedelic Studies (MAPS), the Heffter Research Institute, and the more recently founded MIND Foundation are pushing and conducting this research.

Psilocybin is investigated for a plethora of mental health conditions and popular science books, like the well-known "How to Change Your Mind" by Michael Pollan, highlight the potential of such substances. This sparks optimism about the future medical use of psychedelic drugs. In parallel, psychedelic festivals, popping up fruitfully like mushrooms after rainfall, are experiencing a boom in popularity.

Hopefully, we are now in the purgatory between prohibition and a future in which psychedelic substances may be approached ethically and rationally, with the wisdom of the past in mind. It is only with this approach that our present decisions can shape a future that serves us all.

Did you have a psychedelic experience induced by psilocybin and are looking for ways to integrate it into your daily life? Then you might want to check out BEYOND Experience, a 5-day intensive workshop on psychedelic integration.

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