Tryptamine Cubensis

entered: Jan 10 1997 by Psylocybe Fanaticus - Seattle

In the following transcription of the science paper and discovery of Dr. Jochen Gartz, he describes adding a 25 millimolar concentration of Tryptamine HCL (a psilocin and psilocybin precursor) to the cubensis substrate and under lab control conditions, discovered the potentiation of psilocin into never before measured levels in cubensis fruitbodies of up to 3.3% psilocin which is several times the potency as regular cubensis.

PF TEK application of the Gartz Tryptamine technique.

1/2 pint jar:

1/2 - 2/3 cup of vermiculite + 1/8 cup of brown rice powder and (45 milliliters of water with .16 grams of Tryptamine HCL added)

PF experiment results:

The fungus cultured as usual except that the fruit bodies grew dwarfed. Bio-assay showed that they are at least 3 times the usual potency.

PRESERVING THE PSILOCIN - Use the cool desiccation technique of the PF TEK. Dry the shrooms in a refrigerator under COLD conditions. Store the dried fungi in a tight container with desiccant in the freezer.

March 6 1997 entry - Tryptamine formula update

The above formula is a bit to much for the pf tek. That is why the shrooms grew dwarfed and some jars failed to fruit. The answer is that the pf substrate is much lighter and thinner than Gartz' substrate. Gartz used cooked brown rice and cow dung. This is heavier, thicker and more nutritious than the pf substrate formula, so therefore, the tryptamine hcl content should be less also. PF has received some very reliable information that 1/2 to 3/4 of the above formula should be used. So instead of .16 grams of tryptamine HCl, use .1 or less grams of tryptamine hcl.

Planta Medica 55 (1989) page 249 - 250 Jochen Gartz

BIOTRANSFORMATION OF TRYPTAMINE IN FRUITING MYCELIA OF PSILOCYBE CUBENSIS.

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ABSTRACT

Mycelial cultures of Psilocybe cubensis, with the ability to form psilocybin and psilocin de-novo, also hydroxylated and methylated fed tryptamine to give psilocin in up to 3.3% dry mass of the obtained fruit bodies. By using HPLC and TLC, it was found that these mushrooms contain only a small amount of psilocybin (0.01-0.2% dry mass). The values of psilocin are the highest described in any mushrooms.

INTRODUCTION

Psilocybe cubensis (Earle) Sing, is a subs-tropical mushroom and contains the indole alkaloid psilocybin and only small amounts of its dephosphorylated counterpart psilocin (1-4). Variations in these metabolites have been well demonstrated by investigations of fruit bodies cultivated under controlled conditions of a rye-grain medium (2) and rice substratum (3), respectively.

The study of psilocybin biosynthesis in submerged culture of P. cubensis showed that radioactive tryptamine functioned as a better precursor than tryptophan (5-7). It was found that not less than 22.4% of the psilocybin formed was derived from the labeled precursor tryptamine (5). The level of psilocin was generally zero in the mycelial tissue from these experiments (5-7).

In the present paper, the bio-transformation of fed tryptamine in fruiting mycelia of *Psilocybe cubensis* is described.

MATERIALS and METHODS
Cultivation of Psilocybe cubensis

A dried cow dung/rice-grain mixture (2:1) with twice the amount of water was used to obtain fast fructifications without casing of a strain (3) of *Psilocybe cubensis* . A 25 mM concentration of tryptamine (as hydrochloride) was added to this medium. Cultivations without the addition of tryptamine were also tested. The methods of cultivations were described in (3).

The first sporocarps were produced by cultures of *Psilocybe cubensis* in 3 to 4 weeks. The cultures continued to produce mushrooms in five flushes. Each flush was harvested as soon as the sporocarps were mature. The mushrooms were immediately freeze-dried, sealed in plastic, and stored at -10 degrees C until analysis.

EXTRACTION and ANALYSIS The extraction procedure and the analysis of the indole alkaloids by using HPLC and TLC were described in the previous papers (3,8-10). The presence or absence of tryptamine was demonstrated by TLC as described by Stijve et al. (11).

RESULTS and DISCUSSION

The cow dung-rice mixture actually produced the first flush of mushrooms earlier than the cultivations on ry (with casing) (2) and rice (3), respectively. They yielded an average of 3 g dry mass per 10 g substratum.

Under the same culture conditions, the fructification times, the yields, and sizes of the mushrooms as well as the bluing feature (3) were equal when the growth media also contained high concentrations of tryptamine. Initial experiments without the addition of tryptamine were performed to determine the content of psilocybin and psilocin in comparison with experiments using other culture conditions and/or media (2,3).

The levels of psilocybin and psilocin varied from one flush to the next, but generally were much the same as those in the other experiments (2,3) (table 1). Consistently low levels of psilocin were found in the mushrooms without the addition of tryptamine to the substratum. Additionally, psilocin generally was absent in the first flush as was also observed in earlier investigations (2,3). Table 1 shows that the fed tryptamine gives high values of psilocin in each flush from the cultures.

Table 1 Variation of psilocybin and psilocin levels in *Psilocybe cubensis* as a function of flush number from the cultivations with (a) and without (b) addition of tryptamine (25 mM concentration).

Flush no.	**Psilocin**	**Psilocin**	**Psilocybin**	**Psilocybin**
	a	b	a	b
1.	2.1	-	0.01	0.55
2.	3.3	0.01	0.02	0.48
3.	2.8	0.02	0.2	0.51
4.	3.1	0.09	0.07	0.46
5.	2.9	0.15	0.13	0.61

These psilocin levels are uncommonly high (from 2.1 to 3.3%) since values reported for psilocin in dried mushrooms are always below 1% (1-4,12,13).

Inocybe Aeruginasens Babos contains only traces of psilocin but high amounts of the incompletely methylated psilocybin (baeocystin) (9). In contrast to the intitial experiments without an addition of tryptamine, the mushrooms generally contained only small amounts of psilocybin. The tryptamine level was always zero in each mushroom. In this case no tryptamine was additionally found in the methanolic extract of the vegetative mycelia from the substratum.

In a previous report, Gartz (3) was unable to detect baeocystin in P. cubensis. But Repke et al. (14) reported traces of baeocystin in other strains of *Psilocybe cubensis* about 10 years ago. They suggested that many non-specific enzyme systems exist in fungi which have the ability to oxidise exogenously added compounds, as well as normal, obligatory intermediates (14).

The results in Table 1 show that the enzyme systems in *Psilocybe cubensis* have a high hydroxylation and methalation capacity to convert added Tryptamine to psilocin. It is possible that a reduced amount of phosphate in the culture media decreased the bio-synthesis of psilocybin from psilocin in the media.

P.cubensis also failed to produce detectable amounts of baeocystin under these culture conditions.

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