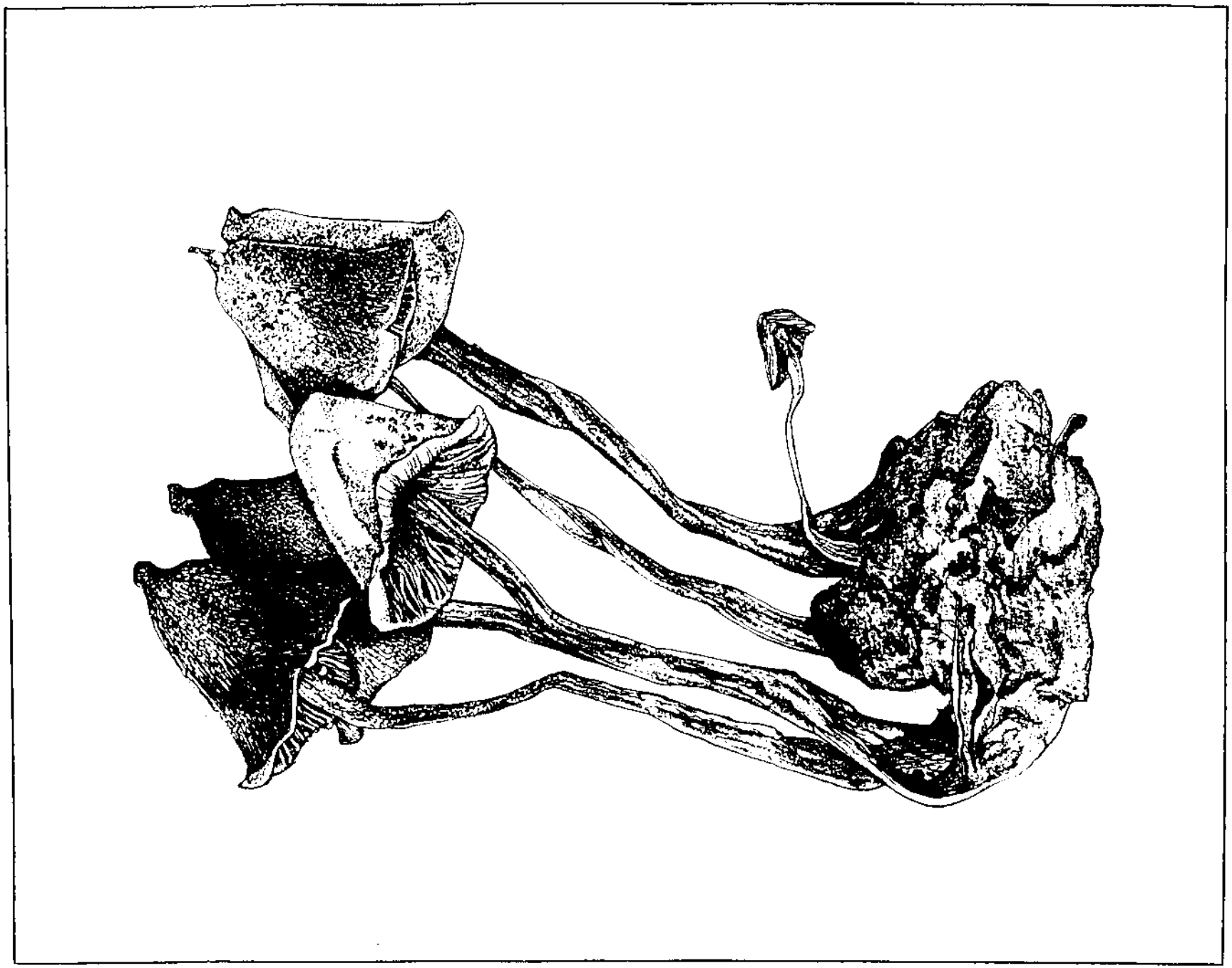
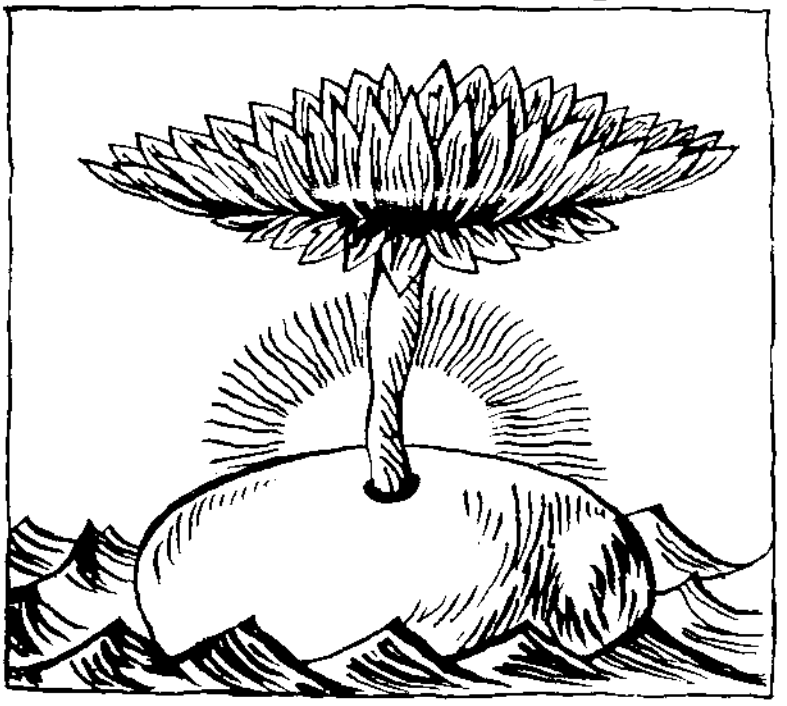
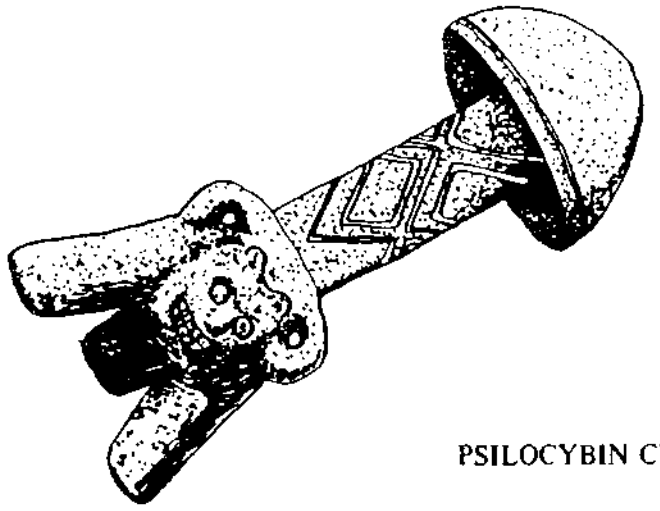


the Psychedelic Guide to Preparation of the Eucharist

in a few of its many guises



as edited by
Robert E. Brown & Associates
of the Neo American Church League for Spiritual Development
&
The Ultimate Authority of the Clear Light



PSILOCYBIN CULTURE

The purpose of these instructions is to provide the details of producing psilocybin from a natural source. The traditional mushrooms are difficult to grow, but the fungal mycelia or thread-like portions of the same organism may be grown in culture, producing considerable psilocybin.

It is important in working with fungi to use pure culture technique to prevent the vigorous wild molds taking over the slower growing psilocybe fungus. Pure culture technique is treated in detail in any good microbiological manual. Better yet, find someone who has had bacteriological training to help you learn how to transfer cultures with an innoculating loop.

The psilocybe fungus must be pure-cultured prior to any other operations. Make a sterile water solution of the spore dust and plate it out in dilutions on potato dextrose yeast agar in Petri dishes. After growing several days some of the plates should show signs of the white mycelial mats of the psilocybe fungus. Obvious wild molds must be discarded and the selected culture growths may be tested by reculturing in PDY broth and testing a methanol extract of the fungus with the Keller-Reagent (see note below).

Make agar slants for storing cultures by filling 6 inch by ½ inch screw cap tubes one-third full of melted PDY agar. Autoclave and let cool at an angle so the gelled agar makes a slanted surface in the tube. Innoculate the slants with the cultures from the Petri dishes, taking care to keep everything free from external contamination. The lightly capped tubes are stored at room temperature until a mycelial mat has grown. Screw the caps tight and store in a refrigerator. These will keep about a year before they will need reculturing.

The main culture medium is a liquid, prepared according to formulae listed below. Culture jars may consist of various-sized mason jars with covers made from heavy-gauge aluminum foil. In as much as media are prepared to culture *Psilocybe* mycelia to the extinction of all other organisms, it is necessary to sterilize the culture jars with the medium in them. Sterilization is best accomplished by placing the covered jars (no more than half full of medium) into a canning pressure cooker containing a little water. A temperature of 250°F is most easily maintained if the pressure cooker has a gauge giving temperatures at different pressures. After 15 to 20 minutes, cut off the heat, but keep the cooker sealed, as sudden loss of pressure will cause the medium to boil over. If the temperature goes too high or cooking is too long, some of the sugars will begin to carmelize. This reaction renders the medium unfit for growing the fungus since caramel slows growth.

MEDIA FORMULAE

Potato Dextrose Yeast Agar

Wash 250 grams potatoes (do not peel).
Slice 1/8 inch thick.
Wash with tap water until the water is clear
Drain, rinse with distilled water
Cover with distilled water and cook until tender
Drain liquid through flannel cloth or several thicknesses of cheesecloth into a flask or jar
Rinse potatoes once or twice with a little distilled water
Keep liquid and throw potatoes away – add enough distilled water to make up one liter of liquid
Bring liquid to a boil and add:

- 15 grams of agar – stir until dissolved (watch carefully or it will boil over - best to use an open stainless steel pan)
- 10 grams of dextrose
- 1.5 grams of yeast extract

While liquid is hot, distribute into desired containers
Autoclave for 15 minutes at 250° F (about 15 lbs. pressure)

PDY broth is made in the same way omitting the agar.

rye grain medium:

for ½ pint jars:

- 50 grams rye grain (whole)
- 80 ml. water
- 1 gram chalk (Calcium carbonate)

for pint jars:

- 100 grams rye grain
- 160 ml. water
- 2 grams chalk

for quart jars:

- 225 grams rye grain
- 275 ml. water
- 4 grams chalk

Note: the grain medium may seem to be a bit dry at times; if so, a few ml. of sterile water may be added.
The rye medium is also used as a "spawn" for innoculation of horse manure compost as is done in commercial mushroom culture. Methods for growth of *Psylocybe* on compost have been worked out, but require access to a commercial source of compost, or know-how of preparing small amounts of compost. *Ps. mexicana* does not fruit on compost, but *Ps. cubensis* will.

After preparation and sterilization, keep the media at room temperature for three days without opening, as a check to see if the sterilization technique was effective. Any growth or scumminess indicates unwanted growth and that medium must be discarded.

These large containers of broth may now be innoculated carefully with loops of whitish mycelia taken from the pure stock cultures, using pure culture technique. Keep covered and incubate at 70-75°F for 10-12 days. Temperature is important as the fungus produces psilocybin poorly at higher temperatures and grows poorly at lower temperatures. Ideally, harvesting is done four days after all the sugar in the medium has been used by the fungus. This may be followed with the use of a simple saccharimeter, if desired. Otherwise, trial and error will establish the optimum incubation time which will produce the best yields.

The culture contains a mat of fibrous mycelia at the end of the growth period. No mushrooms or carpophores are produced, but these are not essential to psilocybin production since the mycelia contain an equal percentage. Filter the medium through a flannel cloth, collect the matted mycelia from the cloth and dry it in a dryingoven at less than 200°F. A kitchen oven may be used if the door is kept partly ajar and the temperature is watched closely. The mycelium residue is powdered and extracted three times with methanol and the methanol carefully evaporated. A hair dryer does this nicely, but the fumes from methanol are terribly poisonous and the area must be well ventilated. Take care to remove all of the poisonous solvent from the psilocybin residue.

Practice, with the help of a competent bacteriologist, will improve yields. If possible, have an expert in mycology isolate the pure psilocybe fungi from the dried mushrooms.

Psilocybe cubensis grows and fruits readily on the potato dextrose yeast (PDY) agar or on sterilized grain such as rye; *Psilcoybe mexicana* fruits only on PDY agar.

See the U.S. Pharmacopoeia for the Keller-Reagent, a solution of ferric chloride in glacial acetic acid used as a general test for alkaloids. (Not specific for psilocybin.)

For illustrations of the fruiting bodies (carphophores) of Psilocybe mexicana see Compt. Rend. Acad. Sci. 246: 1346-1351 (1958).

For the extraction method see Experimentia 14: 107 (1958).

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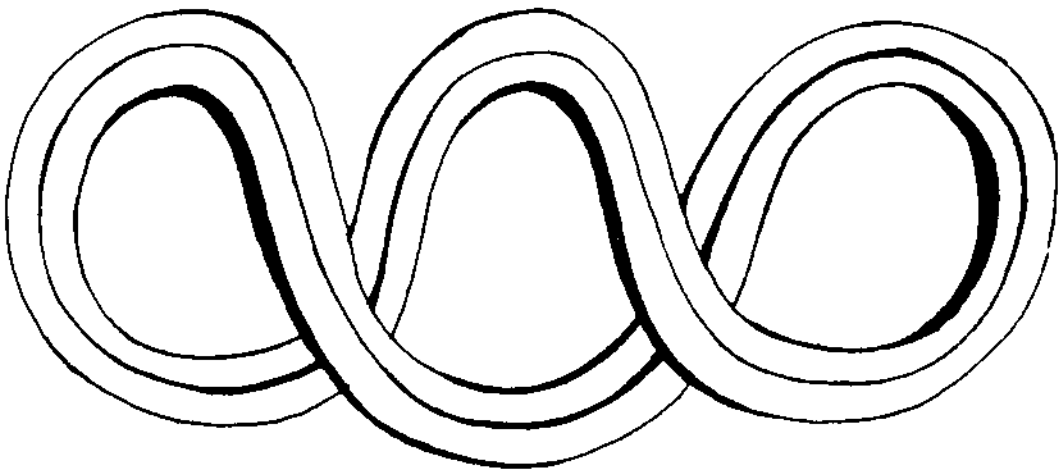

SYNTHESIS OF PSILOCYN

Introduction

This synthesis is designed to produce psilocyn from obtainable materials, but is very long and involves many steps as a consequence.

STEP I

6-nitro ortho-toluidine is prepared by reduction of an ammoniacal-alcohol solution of 2, 6-dinitro toluene using hydrogen sulfide or ammonium sulfide.

Hydrogen sulfide is a deadly, foul-smelling gas which must be handled out of doors on a windy day. This reagent may be purchased as a compressed cylinder gas or may be generated by action of acid on ferrous sulfide or water on aluminum sulfide. Ammonium sulfide solution is much safer and easier to use and is produced in the reaction anyway, even if the gas is used.

20 g of 2, 6-dinitro toluene is mixed with 60 ml of 93% ethanol and 50 ml of concentrated ammonium hydroxide. The mixture is warmed and stirred while hydrogen sulfide is bubbled through the solution for one hour. If ammonium sulfide is added, the ammonium hydroxide is not necessary, but the sulfide solution must be added dropwise over the period of an hour. The solution is transferred to a casserole and the alcohol evaporated. The residue is acidified with HCl and is extracted with that hot acidic solution, the toluidine being only partly soluble in cool water. Filter the solution cool and make basic with ammonium hydroxide. Filter and wash with water; recrystallization is not necessary. The base melts at 91.5°; yield, 96%.

STEP II

25 g of 6-nitro ortho toluidine is dissolved in a mixture of 50 ml con sulfuric acid in 800 ml of water. 12.5 g of sodium nitrite is dissolved in water and dropped in while the whole thing is cooled in an ice-bath for two hours. The whole reaction may conveniently be carried out in a gallon jug if care is taken to protect the glass from thermal shock. React the solution overnight in a refrigerator to take care of insoluble reactants. To the jug containing the filtered cooled solution add 2167 ml water with 250 ml con sulfuric acid and warm in a large kettle full of warm water gradually brought to a boil while the jug is in it. After nitrogen bubbles cease to be evolved, fill the jug nearly to the top and skim any residue from the surface. Cool the mixture slowly to near 0° and filter the crystalline nitrocresol from the solution. Ether extraction of the solution will yield another gram of product. Yield, 22.2 g.

STEP III

Dissolve 77 g 6-nitro ortho cresol in a solution of 20 g sodium hydroxide in 200 ml water in a roundbottom flask. A trace of sodium sulfite will remove any dissolved oxygen which might oxidize the sodium cresol. Controlling the temperature with an ice-bath, add cautiously 63 g (47.8 ml) of cold dimethyl sulfate, making sure that the cresol is completely dissolved first. Extend the addition to the period of one hour, vigorously swirling the contents after each addition. After the addition is complete, continue swirling while the flask warms up to room temperature and warm the flask further to 100° in a water bath for an hour. The product separates out as a dark oil in the bottom which may be washed with hot water. Cool and extract the dark oil with benzene or ether. Dry the solution over anhydrous sodium sulfate.

STEP IV

2-nitro 6-methoxy toluene is converted to 2-nitro 6-methoxy phenyl pyruvic acid by reaction in potassium ethylate and diethy oxalate.

Potassium metal (7.8 g) is shaken under xylene at 100° until it is reduced to a fine suspension which readily settles as the liquid cools. After the xylene has been decanted, the metal is washed twice with anhydrous ether (170 g or 238 ml), leaving the last portion on the powdered metal. This operation is very dangerous due to the reactive nature of potassium metal and even contact with damp air is likely to start a fire. Absolute ethanol is cautiously added to the ether-potassium slurry care being taken not to add so much at once that the ether boils too vigorously. After standing one-half hour, the liquid is filled with a crystalline precipitate of potassium ethylate. Diethyl oxalate (29.2g or 27 ml) is now added. The solid ethoxide dissolves to a clear orange solution with the production of sufficient heat to cause the ether to boil. To this clear solution is added 12.5 g of 2-nitro 6-methoxy toluene, and the reaction mixture immediately turns red. After this has been gently heated under reflux at 35-38° for 18 hours. the potassium derivative separates as a dark red, rather gummy precipitate, which is extracted with water and the red alkaline solution filtered, washed with a little ether to remove unreacted nitro methoxy toluene, and acidified with dil HCl. Upon blowing air through the liquid to remove dissolved ether, 2-nitro 6-methoxy phenyl pyruvic acid, separates out as a brown oil which may solidify slowly. This is collected and dried in air.

STEP V

Crude 2-nitro 6-methoxy phenyl pyruvic acid (23.9) g is dissolved in ammonia (140ml of .88° ammonium hydroxide made up to 200 ml with water) and a hot water solution of ferrous sulfate (180 g of hydrated crystals in 200 ml water) is added to the reddish-brown, alkaline solution. Reduction is instantaneous and the black mixture is heated on a water-bath for half an hour with frequent shaking, and then gently boiled for the same length of time. After cooling, the black sludge of ferric hydroxide is filtered off using some filter aid such as Celite or asbestos pulp to keep the filter from becoming stopped up with the slimy black precipitate. Wash the precipitate with dilute hot ammonia until a portion of the filtrate is no longer cloudy when acidified with HCl. Concentrate the filtrate nearly to dryness, acidify with HCl and extract with acetone. Evaporate the acetone, dissolve the residue in a small portion of con ammonia and re-acidify with HCl. The 6-methoxy indole 2-carboxylic acid separates out as a dirty white, sandy precipitate, which is collected and dried at 100°. Melting point 235°.

STEP VI

3 grams 6-methoxy indole 2-carboxylic acid is decomposing by heating at 245-250°F for one hour and the indole distilled at 181-183° at 24 mm Hg. A yellow crystalline mass collects in the receiver and is powdered and warmed with dilute potassium carbonate to remove unchanged acid. Filter and wash with dilute potassium carbonate and then water, saving the filtrate to be acidified for recovery of residual acid. The precipitate of 6-methoxy indole is dried in a vacuum desiccator over con sulfuric acid, and may be recrystallized from petroleum ether if desired.

STEP VII

Proceed, using the processes for DMT, using 75 g of 6-methoxy indole in place of 70 g indole. For the lithium aluminum hydride reduction, use 22.7 g of the 1OC methoxy derivative. The final product will be 6-methoxy DMT which may be used in that form or

converted to 6-hydroxy DMT (psilocyn) by warming with a solution of hydriodic acid, followed by extraction with ether, from the solution made basic with ammonium hydroxide. Psilocybin is difficult to produce and the body must convert it to psilocyn before it is absorbed, so it has no advantage.

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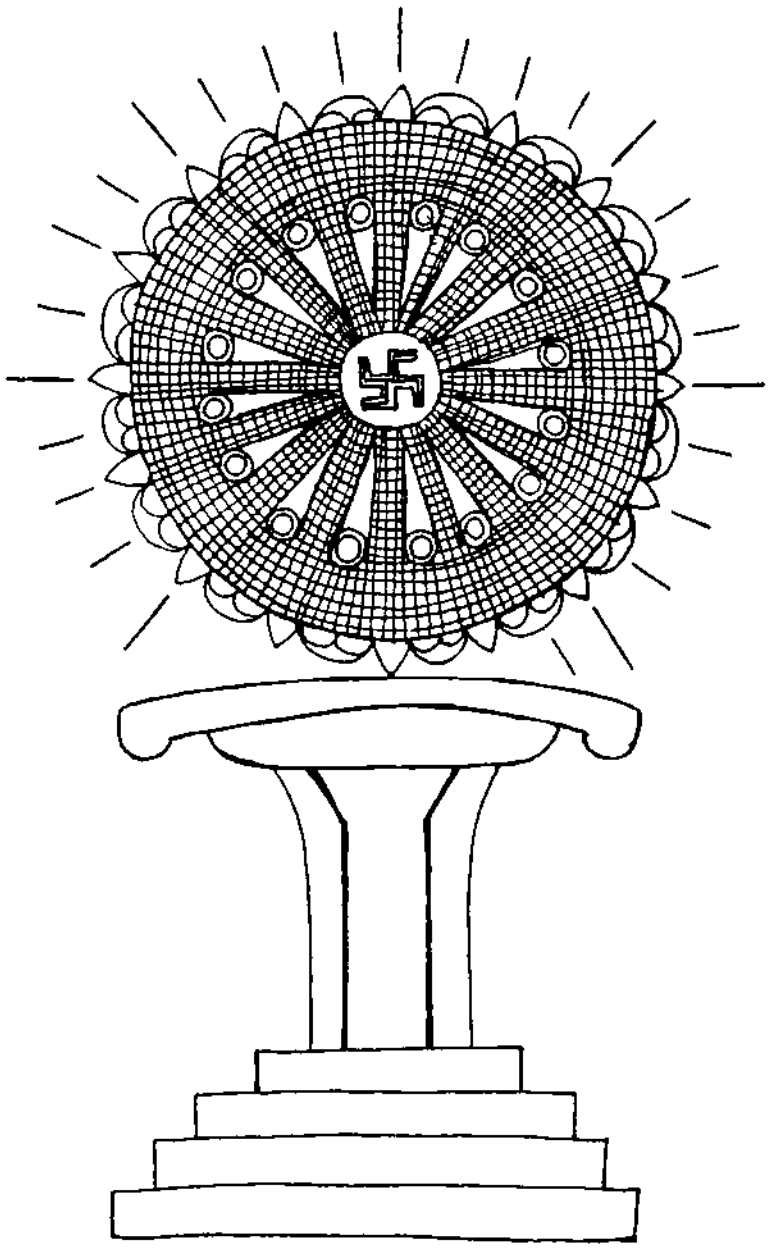

psilocyn synthesis