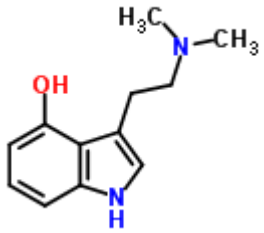
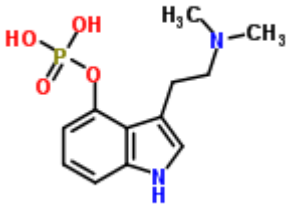
1. PSILOCYN/PSILOCYBIN

A. Structure, Empirical Formula, Molecular Weight

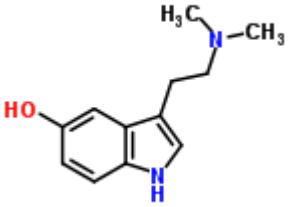


Psilocyn
$C_{12}H_{16}N_2O$
MW 204.3



Psilocybin
$C_{12}H_{17}N_2O_4P$
MW 284.3

Note: psilocybin is the phosphate ester of psilocyn



Bufotenine
$C_{12}H_{16}N_2O$
MW 204.3

B. Synonyms: 4-Hydroxydimethyltryptamine, 4-phosphoryloxy-N,N-dimethyltryptamine, magic mushrooms, shrooms, food of the gods, teonanacatl, Psilocin

C. Trade Names: NA

D. Drug Action: Hallucinogen

E. Common pharmaceutical/street forms: No medical use in the U.S.A. Psilocyn and Psilocybin are the active constituents in hallucinogenic mushrooms of the genus *Psilocybe*. There are over 100 species of this genus which contain Psilocyn and Psilocybin.

F. Solubility:

(1) Psilocyn: Methanol, ethanol, dilute acetic acid

(2) Psilocybin: Dilute acetic acid, methanol

G. Extraction:

(1) Dry extraction for TLC and GC/MS

(a) Crush dried mushroom material to increase surface area and place in large glass tube.

(b) Add methanol for TLC or C15 methanol for GC/MS analysis. Allow to soak for at least 30 minutes, vortexing about every 10 minutes.

(c) Filter to remove insoluble mushroom material.

(d) Evaporate methanol in a clean well.

(e) Reconstitute with a few drops of methanol for TLC or C15 methanol for GC/MS.

(f) Filter again to remove insoluble residue if necessary.

(g) Run with both psilocyn and psilocybin standards for TLC. Run with psilocyn and bufotenine for GC/MS.

(2) Basic extraction for GC/MS (Note: Only psilocyn will extract with this method.)

(a) Finely grind up approximately 0.5 grams of mushroom material.

(b) Add H2O and sodium bicarbonate, forming a paste.

(c) Extract the paste with diethyl ether.

(d) Decant the ether and evaporate to dryness.

(e) Reconstitute the sample in C15 methanol.

(f) Use an insert for GC/MS analysis.

(3) Extraction for chocolate containing mushrooms

(a) One to two squares of sample is transferred into a mortar and ground with a pestle.

(b) The resulting powder is covered with 10% acetic acid, and the sample is ground further with the pestle.

(c) An additional 5 to 7mL of deionized water is added, and the mixture is ground for about 2 minutes, creating a thin slurry.

(d) This slurry is divided into equal portions, and each is transferred into a test tube.

(e) An equal amount of chloroform is added to each tube, [mixed] and the tubes are centrifuged for 3 minutes.

(f) The aqueous (top) layer is pipetted into a beaker from the test tubes.

(g) 2 or 3 drops of this solution are placed in a spot plate and treated with Weber reagent; a red => dark blue color is indicative of the presence of psilocyn.

(h) The aqueous solution in the beaker is neutralized by slowly adding sodium bicarbonate (powder) until the effervescence stops.

(i) A little excess bicarbonate is added, and the pH is checked with pH paper to make sure it lies between 8-8.5.

(j) The resulting solution is then transferred into new test tubes, and each is extracted with an equal amount of ether.

(k) The tubes are centrifuged for 5 minutes.

(l) The ether layers are collected into a new test tube.

(m) An equal amount of 2% sodium bicarbonate solution is added and the tube is mixed.

(n) The ether (top) layer is removed, evaporated and is ready for GC/MS.

(o) Reconstitute the sample in C15 methanol.

(p) Use an insert for GC/MS analysis.

H. Chemical indicator tests:

(1) Van Urk's: Purple

(2) Weber: Red => Dark blue (indicator test for psilocyn)

I. TLC:

(1) Mobile Phase:

(a) System 1: Methanol:conc. ammonium hydroxide (100:1.5)

(b) System 2: n-Butanol:glacial acetic acid:water (66:17:17)

(2) Locator: Van Urk's reagent, then place in fuming conc. hydrochloric acid chamber

Note: The presence of Psilocybin can only be detected using TLC due to its thermal decomposition under GC/MS conditions.

J. GC/MS: Analyze using "Drugs1" program.

Note: Psilocybin decomposes to Psilocyn under GC/MS conditions. GC/MS analysis should be compared to current, Psilocyn and Bufotenine standards.

K. Comments: NA

L. Report as:

(1) Psilocyn, a dangerous drug.

(2) Psilocybin indicated

M. References:

(1) Marnell, T., (ed.), Drug Identification Bible, 4th ed., Drug Identification Bible, Denver, CO, 1999, pp. 582-585 and 688-691.

(2) Karch, S. B., The Pathology of Drug Abuse, CRC Press, Boca Raton, FA, 1993, pp. 219-221.

(3) A Rapid Extraction and GC/MS Methodology for the Identification of Psilocyn in Mushroom Chocolate Concoctions, Microgram Journal Volume 1 Numbers 3-4 July-December 2003