



## COMPOUNDS AFFECTING PSYCHIC STATE

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Main effect is change of psychic state

Effects of natural psychic state affecting compounds are known from ancient times – cult and religious ceremonies

Division:

- PSYCHOLEPTICS (central suppression)
- PSYCHOANALEPTICS (central stimulation)
- PSYCHODYSPLEPTICS (hallucinogens, compounds triggering depersonalization)



## PSYCHOPHARMACS NEUROLEPTICS

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RESERPINUM – RESERPINE (ČL 2002)

Source: Different *Rauwolfia* spp., mainly *Rauwolfia serpentina* – snakeroot or sarpagandha (Apocynaceae)

Drug: *Rauwolfiae radix*

Indol monoterpene alkaloid of yohimbane type

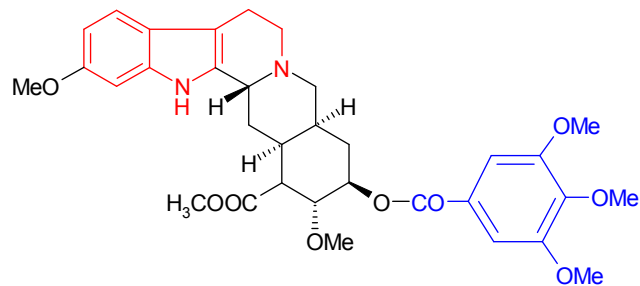
Obtain exclusively by isolation

Dosage: 5 – 15 mg *pro die*





## RESERPINUM – RESERPIN (ČL 2002)



## DEPENDENCE -- ADDICTION -- WHO

**Drug addiction** is according to the WHO **compulsion** to intake of psychotropic active compound („drug“) for feeling of well being which causes. The insufficiency of this compound triggers symptoms of abstinence. Tendency to increase doses. Can be:

- Somatic
- Psychic
- Combination

It starts at people, which consume drugs continually or periodically.

**Addiction** is triggered after repeated application of some therapeutics and rises the **craving** (not compulsion) for repeated application.

- No tendency (or only small) to increase doses
- Symptom of psychic, not somatic dependence
- Do not rise abstinent symptoms



## PSYCHODYSLEPTICS

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- Almost no therapeutic importance
- Toxicological importance
- Abuse as narcotics
- Subjected to assignment about narcotic substances
- Induce pleasant initial hallucinations
- Induce dependence and can trigger latent psychosis
- Abuse is generally dangerously rising



## PSYCHODYSLEPTICS

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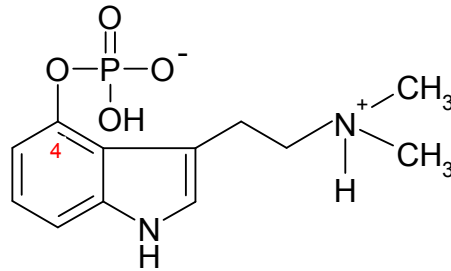
- DERIVATIVES OF INDOL (psilocybine, bufotenine, ergine, semisynth. LSD)
- PHENYLETHYLAMINE DERIVATIVES (meskalin)
- *CANNABIS* CONTAIN COMPOUNDS (tetrahydrocannabinol – THC, marihuana, hashish)
- ISOXAZOL DERIVATIVES (muscimol, ibotenic acid)
- ANTICHOLINERGIC COMPOUNDS (scopolamine, atropine)



## PSYCHODYSLEPTICS PSILOCYBINE

Source: mushrooms *Psilocybe*,  
*Conocybe*, *Stropharia* spp.  
(Agaricaceae). Middle and South  
America „TEONANACATL“

The first in nature described  
phosphorylated indol derivative  
N,N-dimethyltryptamin-4-  
phosphate



Effective dose = 4-8 mg  
Effect gets on after 30-60 min.  
Visual and acoustic hallucinations  
Typical imaginations of ability to fly

Psylocin is a metabolite.



## PSYCHODYSLEPTICS PSILOCYBIN

Europe:

*Psilocybe semilanceata* – liberty cap  
*P. cyanescens* – potent Psilocybe or  
wavy cap

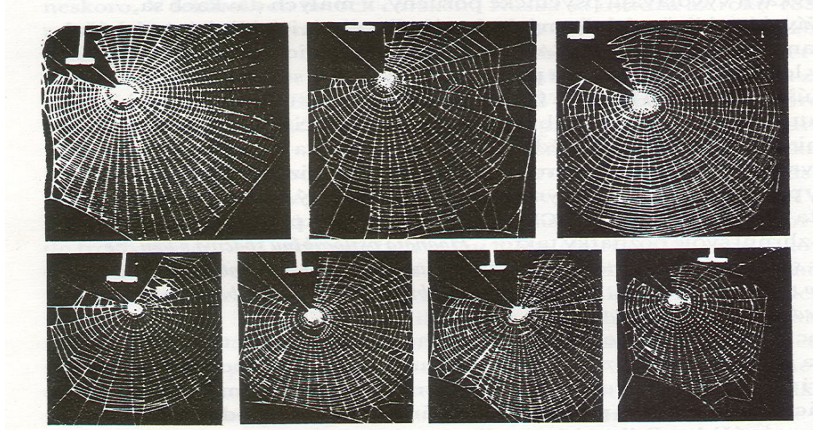
Psilocybine contain 0,01-2,5 %/dry  
weight, in average 1 %

Effective dose in cca 0,5-1 g of dried  
fruiting bodies = cca 5-10 g of  
fresh mushrooms = cca 6-12 of  
fresh fruiting bodies





## Effect of psilocybine on the spider webbing



## PSYCHODYSLEPTICS BUFOTENINE

Source: *Piptadenia peregrina* (snuff powder from seeds)

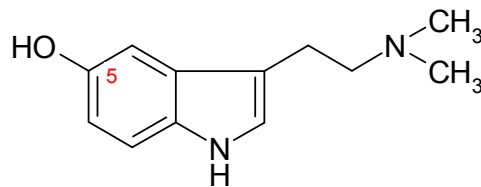
*Amanita citrina*, *A. porphyria* (mushrooms)

*Bufo vulgaris*

N,N-dimethyl-5-hydroxytryptamin

10-15 mg

- short-termed hallucinations, anxiety
- time-space distortions
- depersonalization
- macropsia



# BUFOTENIN AND CHEMOSYSTEMATICS

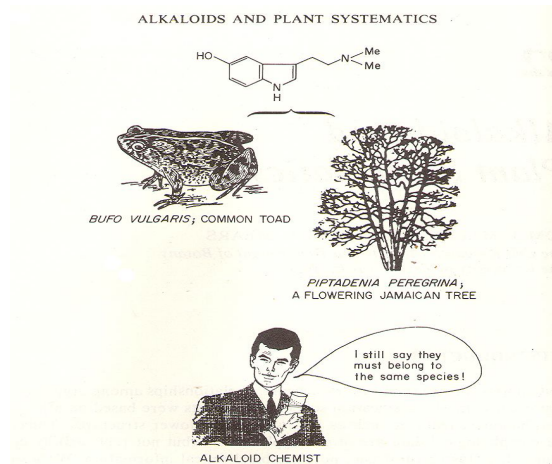
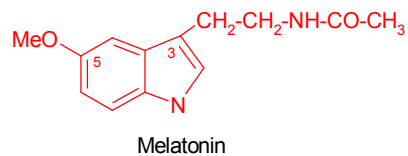


Figure 22.1. Perhaps the most important element in systematics is common sense.

## STRUCTURAL SIMILARITY

**Melatonin** – produced in epiphysis (pineal gland)

- sets up and synchronizes biologic clock, supports circadian system
- increases quality of sleep and fall asleep
- Informs about year period, affects animal reproduction
- Supports immune system, scavenges free radicals, possess anticancerogenic, antionadotropic effects, slows aging



**Serotonin** – tissue hormone found especially in thrombocytes

- neurotransmitter in brain and peripheral tissues, in CNS – mood, cognitive functions, sensoric perception, pain perception, sexual behavior
- Triggers smooth muscles contraction



## IPOMOEA VIOLACEA



## PSYCHODYSLEPTICS ERGIN (amide of lysergic acid)

Source:

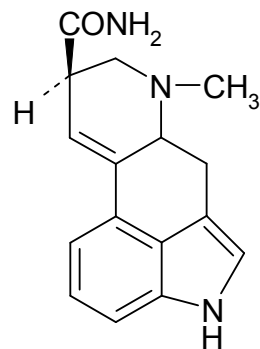
Seeds of *Ipomoea violacea* – morning glory, Beach Moonflower

*Rivea corymbosa* syn. *Turbina corymbosa*

Christmas vine  
(Convolvulaceae)

2-10 mg – depersonalization

Used by Aztecs – (tlilizin, ololiuqui) for religious ceremonies

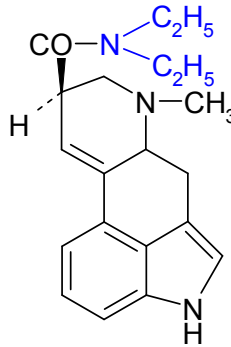




## PSYCHODYSLEPTICS

### LSD (diethylamide of lysergic acid)

Semisynthetic derivative  
Previously uterotonic  
Effect elucidate accidentally in  
1943 by A. Hofmann  
Misused hallucinogen  
Effective dose 20-25 µg  
(0,000020-0,000025 g)  
Initiates chromosome aberrations  
Prof. Timothy Leary - Harvard



## PSYCHODYSLEPTICS

### MESKALINE

Synonyms: Peyotl, Mescal buttons  
(for smoking and chewing)

Source:  
*Echinocactus williamsii* = *Lophophora*  
*Lewinii*, *Trichocereus*

Transversely cut slices – drying –  
mescal „buttons“





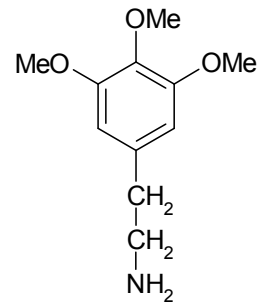


## PSYCHODYSLEPTICS MESKALINE

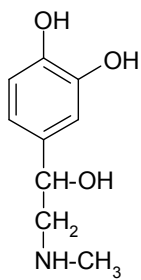
Effective compounds:  
3,4,5-trimethoxy- $\beta$ -fenylethylamine

In cactuses 5-7 %

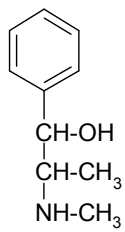
0,2-0,6 g of mescaline triggers  
hallucinations



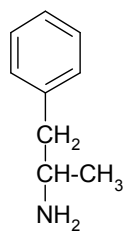
## PHENYLETHYLAMINE DERIVATIVES



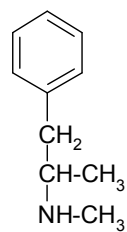
Epinephrine



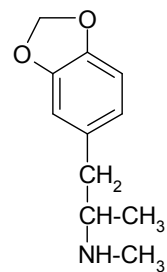
Ephedrine



Amphetamine



Pervitine



Ecstasy (MDMA)

## PSYCHODYSLEPTICS ISOXAZOLES

Source:

*Amanita pantherina* –  
Panther cap

*Amanita muscaria* – fly  
amanita

- Pulp pure white color and  
poisonous



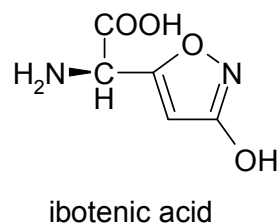
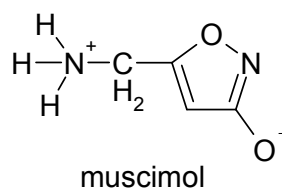
## PSYCHODYSLEPTICS ISOXAZOLS

Contain mixture of isoxazol  
alkaloids

Together with muscarine affect  
parasympaticus.  
Muscimol increases salivation,  
sweting, secretion of bile,  
pancreatic secretion, evoke  
psychic exaltation,  
intoxicating euphoria.

Initiate state similar to alcohol  
intoxication - swoon,  
hallucination, fury

Used to trigger state of berserc.

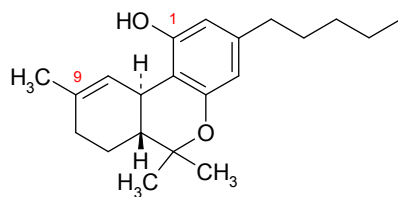


PSYCHODYSLEPTICS  
MARIHUANA, HASHISH, THC

Source: *Cannabis indica* – indian hemp (Cannabaceae)  
Flowering tops of female plants  
Absorbed by mucosa of respiratory or digestive tract  
Mostly often used for smoking  
Hashish – resin obtained from leaves and flowers  
Contain cannabinoids, effective THC



PSYCHODYSLEPTICS  
MARIHUANA, HASHISH, THC



$\Delta^9$ -tetrahydrocannabinol  
antiemetic dronabinol (MARINOL)  
affects tremor and dyskinesia at Parkinson disease





## Effects of some hemp resin components

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<b>Compound</b>	<b>Effect</b>			
	<b>antibiotic</b>	<b>sedative</b>	<b>analgesic</b>	<b>narcotic</b>
Canabidiol	+	-	-	-
Canabidiolic acid	+	+	-	-
Canabinol	-	-	-	-
Canabigerol	+	-	-	-
Canabigerolic acid	+	-	-	-
Canabichromen	-	+	-	-
THC	-	-	-	+





## ANTIPARKINSONICS

Parkinson disease – presenile hereditary-degenerative illness, intellect not touched

Decrease of dopamine and serotonin level in basal ganglia

Elevated tonus of central cholinergic system

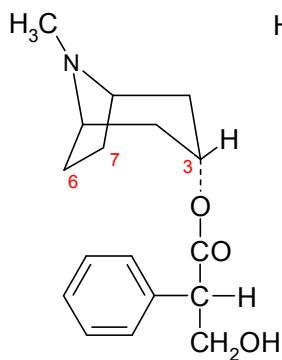
Affects extra pyramidal motile system, loss of associated and automatic movements, tremor

For symptoms suppression it is possible to use central anticholinergic compounds (parasympatolytics)

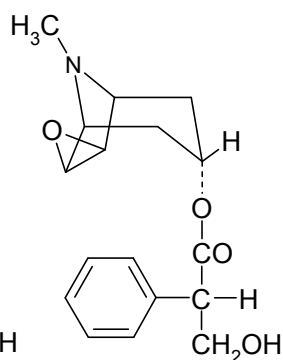


## ANTIPARKINSONICS

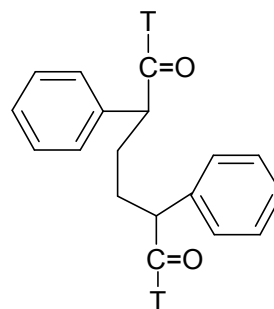
### TROPANE ALKALOIDS



(-)-S-hyoscyamine



(-)-S-scopolamine



belladonine (T = trofyl-)  
(dimer of apoatropine)