

Narcotics

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NDPS ACT 1985.

This Act may be called Narcotic and Psychotropic Substances Act ,1985.

It extends to the whole of India. About 106 Psychotropic substances have been mentioned in the Act.

NARCOTIC DRUGS

- Analgesics
- Depressants
- Stimulants
- Hallucinogen.
- Psychotropic.

Narcotic Drugs are classified based on

- Schedule drugs based on their potential for Abuse.
- Scientific evidence of the drug.
- Pharmacological effect on the body
- State of current scientific knowledge about drug and its history.
- Current pattern of abuse.
- Addiction trend of the drug.

What is Drug Abuse?

- Use of drug for no solid medical ground
- Use of drug for no solid scientific ground
- Use of drug without prescription of medical practitioner.

Why Narcotic drugs Need to be controlled

- Instigation for crime.
- Govt. of India under the constitution has an obligation to **preserve and protect public health.**
- The indiscriminate use of drugs spoil the individuals health and there by the public health.

NDPS ACT 1985

*It is an act of the parliament of India, that **prohibits** a person to produce / Manufacture / Cultivate / Possess / Sell, purchase, transport store and / or consume any Narcotic Drug or Psychotropic substance.*

NDPS Act - Punishments

Based on quantity of drugs Punishment given Under Sec VIIa & XXIII a of NDPS Act.

- *Accused can be Arrested without warrant (Cognizable Offence).*
Unlike Arms act, Explosive act
- *Prosecution does not require prior sanction.*
- *Enhanced punishment to repeat offenders.*
- *Death penalty on 2nd conviction for specified offenses involving specified quantities of certain drugs.*
- *Possession of drug – Based on which fine and punishment.*
- *Non bailable punishment., etc.,*
- *Court can freeze, Seize Illegally acquired property.*

What is the legal definition for NDPS drug?

Any drug which is notified and whose illegal use & sale carry legal penalties vide various sections of NDPS act of 1985 are NDPS drugs.

What are the advantages of the act of 1985?



It includes new provisions and the investigating agency have been expanded.

The punishment is *stringent*.

The quantum of *punishment depends on the quantity* i.e.,

Small quantity

Commercial quantity

In between small and commercial quantity

Intoxication with these drugs is an offence under section 27 of the act.

Classification of Narcotic Drugs based on the Preparation

- * **Natural(Vegetable Origin)**

e.g., cannabis, opium.

- * **Semi synthetic** - raw material of natural origin (Chemically processed to isolate the active principle) e.g., LSD, Heroin

- * **Synthetic** - chemicals as starting material.
e.g., Pethidine, PCP

DEPRESSANTS or DOWNERS : Depressants are drugs which slows down the mental activity of the Central Nervous System.

eg: opium, morphine, benzodiazepine, group of drugs , barbiturates

STIMULANTS OR UPPERS : These drugs causes a state of **Excite or Stimulate** the central Nervous system.

Eg: cocaine, khat, amphetamines

Hallucinogens

Hallucinogens are drugs that cause marked alterations in the thought processes, perceptions and moods. eg: cannabis, LSD, PCP, psilocin mushrooms etc.

In particular these drugs, affect the users visual perception and making, it difficult to distinguish between fact and fantasy.

An individual thought may undergo transformation resulting in blurring of distinction between conscious and unconscious thought. e.g LSD Drug.

For centuries, many of the naturally occurring hallucinogens found in plants and fungi have been used.

In more recent years, a number of synthetic hallucinogens have been produced.

e.g :Phencyclidine, Mescaline, Psilocybin, MDMA (Ecstasy) etc.

HALLUCINOGENS

Cause sensory illusions

- ▶ Cannabis
- ▶ Peyote Cactus
- ▶ Mushroom
- ▶ LSD
- ▶ Phencyclidine (PCP)

Depressants

Historically, people of almost every culture have used chemical agents to induce sleep, relieve stress, and allay anxiety.

Depressants act upon central nervous system and slows down its activity.

These drugs have been referred to as downers, **sedatives**, hypnotics, minor tranquilizers, anxiolytics, and anti-anxiety medications.

While alcohol is one of the oldest and most universal agents used for these purposes hundreds of substances have been developed that produce central nervous system depression.

Stimulants

Stimulants are sometimes referred to as **uppers** and reverse the effects of **fatigue** on both mental and physical tasks.

eg., cocaine, amphetamine,
methamphetamine

What happens
to the drug
taken?

DRUG



cause a direct effect

ignored

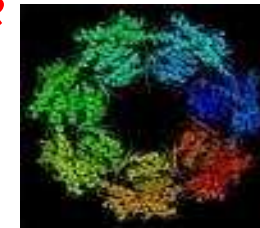
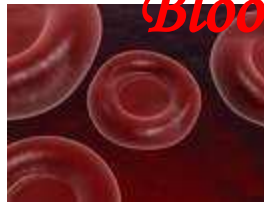
stored

biotransformed



BLOOD

Blood cell / plasma / protein molecule



FLUID/ TISSUE/ ORGAN

Drugs causes dependence in the user.

Psychological dependence:

The emotional need and responses one has developed for a drug is known as psychological dependence

Physical dependence:

The physiology (functioning) of a drug user is altered in such a way that the normal function is possible only in the presence of the drug.

Withdrawal

Withdrawal is defined as the body's attempt to rebalance itself after stopping of prolonged use of drug.

Withdrawal Symptoms

Pleasure	-	<i>pain</i>
Euphoria	-	<i>anxiety & depression</i>
Dryness of mouth	-	<i>Sweating, running nose & tearing</i>
Constipation	-	<i>diarrhoea</i>
Slow pulse	-	<i>rapid pulse</i>
Low BP	-	<i>high BP</i>
Suppressed cough	-	<i>cough</i>
Confidence	-	<i>shivering</i>

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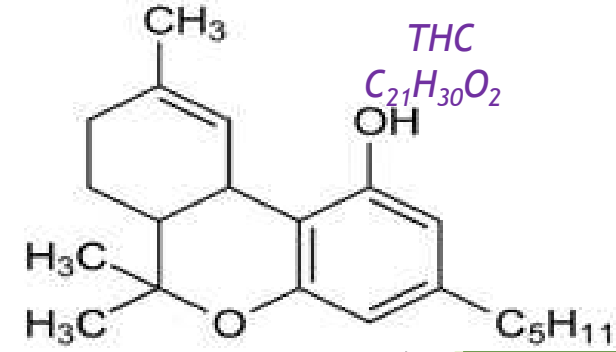
AN OVERVIEW OF COMMONLY ABUSED DRUGS

Cannabis...

- ❖ *Illicit cannabis products fall into three main categories: herbal cannabis, cannabis resin and liquid cannabis (cannabis oil)*
- ❖ *Ganja is the flowering and fruiting tops of the cannabis plant*
- ❖ *Marijuana refers to a preparation derived from the flowering tops of the female cannabis or hemp plant. It is a dry, shredded green / brown mix of flowers, stems, seeds, and leaves of the plant Cannabis sativa. It is usually smoked as a cigarette (joint, nail) or in a pipe. It might also be mixed in food or tea.*
- ❖ *Bhang is made from Cannabis leaves.*



Cannabis...



- ❖ The main psychoactive ingredient in cannabis is **delta-9-tetrahydrocannabinol (THC)**
- ❖ Δ^9 -Tetrahydrocannabinolic acid, which is present in abundance in some cannabis samples, is itself inactive but it is converted by smoking into active Δ^9 -THC
- ❖ **The female fruiting and flowering tops and leaves contain significant quantities of the psychoactive constituent, THC**
- ❖ The widely varying levels of the main psychoactive ingredient, delta-9-tetrahydrocannabinol (THC) is frequently referred to as “potency”
- ❖ THC degrades with time, when exposed to air, light and humidity

Cannabis...

- ❖ **Hashish** or **Charas** is the THC-rich resin produced by crushing the cannabis plant
- ❖ The resin is obtained by rubbing the plants against the palms of the hands, or against rubber sheeting
- ❖ The resin is then collected, and shaped into slabs, rods or balls, or any other desired shape
- ❖ **Hashish oil** / Liquid cannabis is a concentrated liquid extract of either herbal cannabis material or of cannabis resin. **20-60 % of THC**
- ▶ **Flowering/fruiting tops of Cannabis plant**
- ▶ **Synonyms - Thai sticks, Joint sticks and Buddha sticks**



Hashish



Hashish



Balls & Sticks of Hashish



Hashish oil

Cannabis...

- ❖ **Cannabis sativa can be identified by microscopic structures on the surface of the plant, namely, by trichomes (i.e. hair-like projections from a plant epidermal cell).**
- ❖ **Two types of trichomes occur and can be observed with a binocular microscope with a magnification factor of 40.**

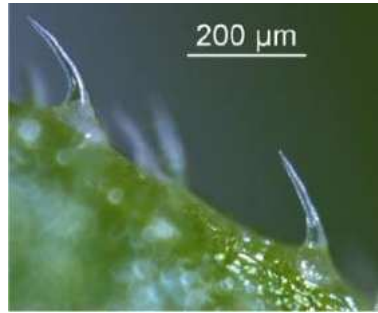
a) Non-glandular trichomes

- **Cystolithic trichomes found on the upper surface of the cannabis leaves have a characteristic bear claw shape and may have calcium carbonate crystals (cystoliths) visible at their bases. Frequently, the trichome is broken and the cystolith freed;**
- **Non-cystolithic trichomes occur mainly on the lower side of the leaves, bracts and bracteoles and lack the enlarged base;**
- **The simultaneous presence of these bear claw-shaped trichomes on the upper surface and the fine, slender non-cystolithic trichomes on the lower surface of the leaves is a characteristic of cannabis.**

b) Glandular trichomes

The glandular trichomes are the structures where the cannabis resin is produced and stored.

Cannabis...



Cystolithic trichomes



Non-cystolithic trichomes

Microscopic view of glandular trichomes



Sessile glands



Stalked glandular trichomes

CANNABIS

Synonyms :

Marijuana, Marihuana, Bhang, Sidhi, Subzi, Patti, Majun, Hem, Sensemilla, Wad, Tea, Gram, Pot and Reefer.

Cannabis compressed into slabs or blocks- known as Corn-slab. Rolled cannabis is called as Corn-cob.

Buddha sticks- 8cm in length and 2g in weight.

KF-{seieved product} – high resin content. 5 sinsemilla[Spanish word- without seed.]

TEST FOR CANNABIS:

Fast Blue B Salt test

1. Carefully mix 2.5g of fast blue B salt with 100g of anhydrous sodium sulphate
2. Dissolve 0.4g of sodium hydroxide in 100 ml of water
3. Place a small amount of the suspected material in a test tube.
4. Add small amount reagent 1.
5. Add 25 drops of reagent 2 and shake the test tube for one minute.
6. Shake the test tube
7. Add 25 drops of reagent of 3 and shake for 2 minutes.
8. Purple red colour of the lower chloroform layer indicates the possible presence of cannabis.

DUQUENOIS-LEVINE TEST:Modified:

- ▶ 1. Dissolve 2g of vanillin in 100ml of 90% of EtOH then add 2.5ml of acetaldehyde.
- ▶ 2. conc.HCl
- ▶ 3. CHCl₃
- ▶ Place a small amount of the suspected material in a test tube.

Add 2ml of reagent in the test tube and shake the test tube for one minute. Add conc HCl. Play of colours will take place. If a violet colour develops within 2-3 minutes, add 2ml of reagent three and shake the mixture gently.

- ▶ RESULT:
- ▶ Violet colour of the lower chloroform layer indicates the possible presence of cannabis.

- ▶ Thin layer chromatography
- ▶ Instrumental methods:
- ▶ GC,GC-MS,HPLC,UV Spectroscopy are suitable techniques.
- ▶ Case: some school students were found drowsy after consuming chocolates and ice creams from a vendor. When these items were ceased and were tested in the FSD lab, ganja was detected.
- ▶ Case: Neighbors were complaining of peculiar odor from a farm house. Police ceased the plants emanating the odor and when tested, they were found to be ganja plants .

DEPRESSANTS:

- ▶ BENZODIAZAPINES
- ▶ COMMON BENZODIAZAPINES:
- ▶ DIAZEPAM((VALIUM)
- ▶ CHLORODIAZEPOXIDE(LIBRIUM)
- ▶ NITRAZEPAM
- ▶ MEDAZEPAM
- ▶ FLUNITRAZEPAM(ROHYPNOL)
- ▶ OXAZEPAM
- ▶ ALPRAZOLAM
- ▶ LORAZEPAM
- ▶ Zimmermann Test:
- ▶ Formaldehyde in Sulphuric acid.Heat at 100 degree for 1 minute.(Variant of Marquis)Benzodiazepines will give orange colour.
- ▶ Flunitrazepam will give a pink colour.
- ▶ TLC
- ▶ Instrumentation Methods:GC,GC-MS,HPLC,FTIR,UV Spectrometry.

ZIMMERMANN TEST

- ▶ REAGENT 1: DISSOLVE 1G OF 1,3 DINITROBENZENE IN 100ML OF METHANOL
- ▶ DISSOLVE 15G OF KOH IN 100ML OF WATER
- ▶ PLACE A SMALL AMOUNT OF THE SUSPECTED MATERIAL ON A SPOT PLATE
- ▶ ADD REAGENT 1 FOLLOWED BY 2
- ▶ REDDISH PURPLE COLOUR INDICATES THE POSSIBLE PRESENCE OF DIAZEPAM OR SOME RELATED BENZODIAZEPINE DERIVATIVES.
- ▶ TLC
- ▶ GC,GCMS,HPLC , FTIR, UV SPECTROSCOPY

POPPY



The poppy **Papaver Somniferum** is the source for non-synthetic narcotics.

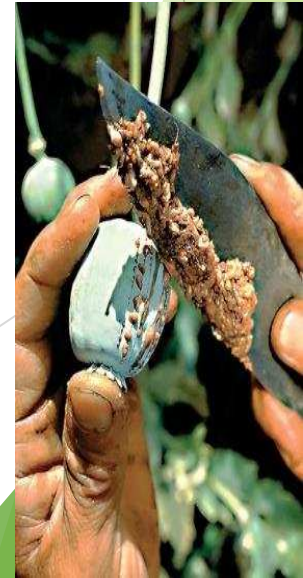
It was grown in the Mediterranean region as early as 5000 B.C., and has since been cultivated in a number of countries throughout the world.

The milky fluid that seeps from incisions in the unripe seed pod of this poppy has, since ancient times, been scraped by hand and air-dried to produce what is known as **opium**.

Opium

- ❖ *Opium is the most potent of the drugs. Opium” is the coagulated juice of the opium poppy Opium poppy” means the plant of the species Papaver somniferum.*
- ❖ *Opium is a natural product, obtained by incision of the unripe poppy capsules.*

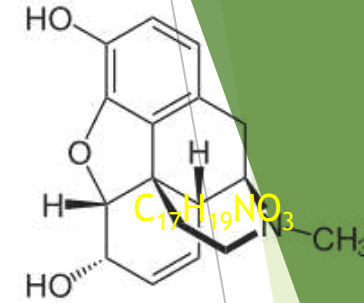
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Opium...

- ❖ *Raw opium is simply dried opium latex*
- ❖ ***Raw opium is a complex mixture containing sugars, proteins, lipids, other gummy substances and water such that the active alkaloid fraction makes up only 10 to 20 per cent of the total weight***
- ❖ ***About 40 alkaloids have been reported***
- ❖ *Five of these can be considered as the main constituents, falling into two general categories*
 - *the phenanthrene alkaloids, represented by morphine, codeine and thebaine*
 - *the isoquinoline alkaloids represented by papaverine and narcotine (noscapine)*
- ❖ ***Morphine is the principal alkaloid of opium***
- ❖ *Other characteristic substances of opium are Meconic acid and Porphyroxine.*
- ❖ *Sample 1 drop+2 drops of 10% Ferric Chloride solution → Blood Red Colour*
- ❖ *Indicates the presence of Meconic Acid.*

Morphine



- **Morphine is the principal alkaloid of opium.**
- It is an opiate analgesic psychoactive drug. It is **ten times stronger than opium.**
- In clinical medicine, morphine is regarded as the gold standard, or benchmark, of analgesics used to relieve severe or agonizing pain and suffering.
- **In a killer disease like cancer, morphine is on top of the list as a pain killer. No synthetic analgesic has yet been made that deserves to replace it.**
- Worst sort of acute pain, kidney stone, acute pancreatitis – morphine has no equal.
- In congestive heart failure morphine dilates blood vessels, preventing fluid from backing up into the lungs.

Morphine

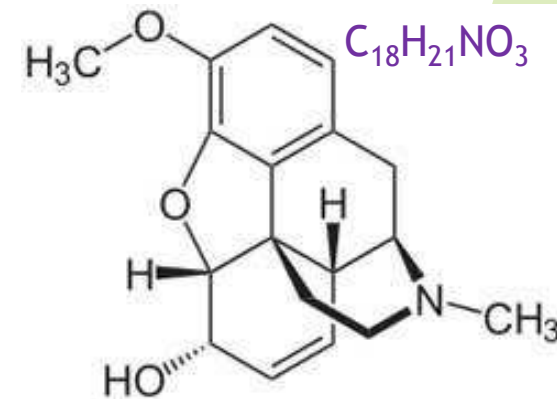
**Morphine - cannot be controlled.
- cannot be banned.
Because of its Best medicinal use.**

**TEST:Marquis Reagent:Violet Colour.
Mecke:Dark Green Colour.**

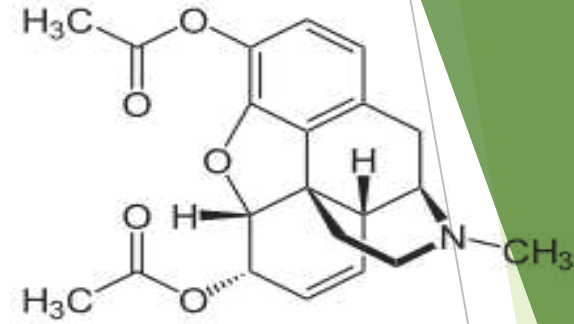
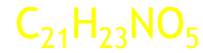
- ▶ In a case some ampoules were seized from a doctor working in a government hospital. On analysis, Morphine was detected. As the doctor had easy access to the drug, he had become an addict and he was trying to sell the ampoules at an exorbitant price.

Codeine

- ❖ *Codeine is a phenanthrene alkaloid obtained from opium.*
- ❖ *It can also be prepared by methylation of morphine.*
- ❖ *It is a **narcotic analgesic**.*
- ❖ *Codeine is available in pills to relieve pain after operation or tooth extraction and in syrups to sooth coughs.*



Heroin



- ❖ **Heroin or diacetylmorphine, also known as diamorphine, is a semi-synthetic opiate drug synthesized from morphine, a derivative of the opium poppy.**
- ❖ *It is the 3,6-diacetyl ester of morphine and functions as a morphine pro-drug (i.e., it is metabolically converted to morphine inside the body).*
- ❖ *Diamorphine hydrolyses in aqueous solution to 3-O- and 6-O-mono- acetylmorphine and morphine to a significant extent at room temperature.*
- ❖ **Diacetyl Morphine of Heroin is known as Brownsugar.**
- ❖ **Heroin is 10-15 more potent than morphine.**

Heroin...

- ❖ Heroin is manufactured from morphine by a process of acetylation.
 - First, opium is either produced illicitly, or is diverted from governmental control.
 - Then morphine is extracted from it in a **clandestine** “kitchen” laboratory.
 - Finally, the morphine is converted to heroin by a laboratory process usually involving the use of acetic anhydride and benzene.
- ❖ Generally lactose or powdered sugar is added as diluent.
- ❖ The most **common adulterants** are quinine, barbiturates (e.g. phenobarbitone), benzodiazepines (e.g. alprazolam), caffeine, paracetamol (acetaminophen), methaqualone, methadone, amphetamine and phenolphthalein.



- In a case, some powder was concealed in a shoe compartment and heroin was detected on analysis.

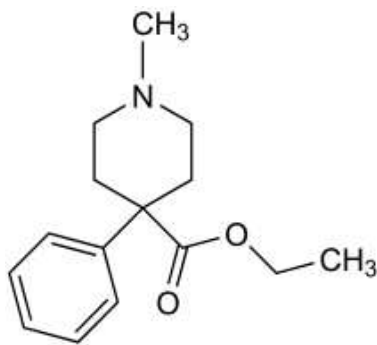
Buprenorphine

This drug is a **semi-synthetic narcotic** derived from Thebaine and is currently being investigated for the treatment of narcotic addiction.

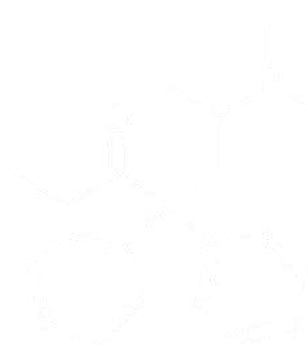
Buprenorphine is potent (30 to 50 times than **analgesic** potency of morphine), has a long duration of action. Buprenorphine is currently available as an injectable.

Synthetic Narcotics

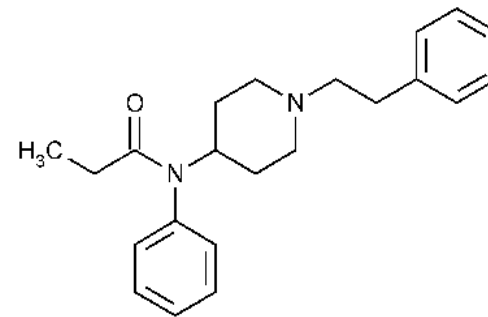
- ❖ *This group covers a variety of drugs of*
 - *synthetic origin,*
 - *chemically unrelated to opium derivatives and*
 - *often differing widely from each other chemically but*
 - *all euphoria producing narcotic effects which approximate closely to those of morphine and other opium derivatives.*
- ❖ *Common synthetic narcotics are:*



Pethidine
 $C_{15}H_{21}NO_2$



Methadone
 $C_{21}H_{27}NO$



Fentanyl
 $C_{22}H_{28}N_2O$



Dextropropoxyphene
 $C_{22}H_{29}NO_2$

STIMULANTS:

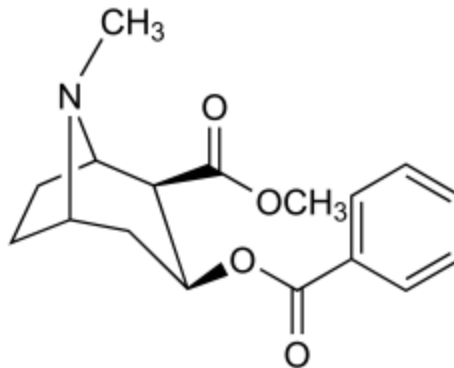
COCAINE:

- ❖ *The coca plant, *Erythroxylon coca*, grows in tropical climates (500 – 2000 meters above sea level) as a bush or tree.*
- ❖ *It grows mainly in Andean highlands of South America.*
- ❖ *Its leaves can be harvested for about 20 years.*
- ❖ **Cocaine** : Tropane alkaloid found in coca leaves.
- ❖ *It is the most potent **stimulant** of natural origin.*
- ❖ *Coca paste is an extract of the leaves of the coca bush containing alkaloids and is referred to as cocaine base.*



Cocaine

- **Cocaine is the tropane alkaloid found in coca leaves.**
- *It can be prepared by synthesis from ecgonine.*
- *Cocaine hydrochloride is usually inhaled intra-nasally or injected.*
- **Cocaine is a powerful addictive stimulant of the central nervous system, an appetite suppressant, and a topical (local) anesthetic.**
- *Cocaine usually makes the user feel euphoric, energetic, talkative and mentally alert, especially to the sensations of sight, sound and touch.*
- *It can also temporarily decrease the need for food and sleep.*
- *Cocaine, the big 'C', the king's drug is the most expensive, a symbol of wealth and status. Once used by the wealthy it has now reached the common man.*



COCAINE

- ALKALOID(COCA)
- INHALED/INJECTED

Other names of cocaine:

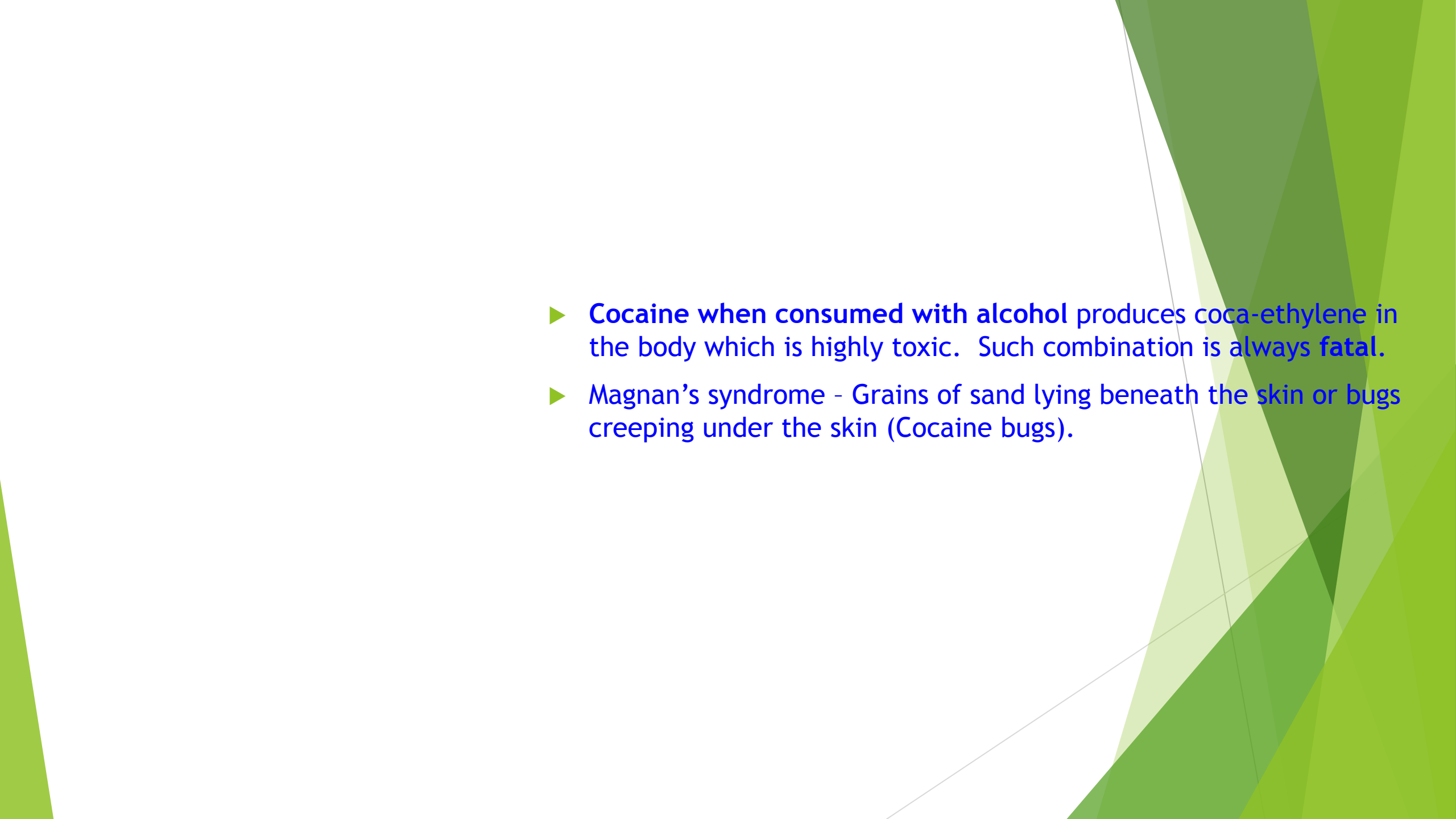
- CANDY
- CRACK
- LADY
- STARDUST
- SNOW
- SPEED BALL
- COCO
- Prolonged use of cocaine leads to increased pulse rate, micro-vascular, neuronal damage.



-
- ▶ In a case ,an African national was arrested for selling whitish powder to students in a university campus. On analysis, cocaine was detected .

Test For Cocaine:

- ▶ Scott Test:
- ▶ Suspected sample+2% Cobalt Thiocyanate in Glycerine and Water followed by conc HCl will give a Blue colour precipitate or Blue solution. Add Chloroform and shake well. Positive test is indicated by a Blue Colour in the Chloroform layer.
- ▶ TLC
- ▶ Instrumental Methods: GC, GC-MS, HPLC, HPTLC, FTIR, UV Spectroscopy.

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- The background of the slide features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, ranging from light lime to dark forest green. These shapes are positioned on the right side of the slide, creating a modern, dynamic backdrop for the text.
- ▶ Cocaine when consumed with alcohol produces coca-ethylene in the body which is highly toxic. Such combination is always fatal.
 - ▶ Magnan's syndrome - Grains of sand lying beneath the skin or bugs creeping under the skin (Cocaine bugs).

Crack Cocaine



Miscellaneous

Psilocybe mushroom magic mushroom

Psilocin & Psilocybin both are **psychotropic** substances

Peyote cactus an alkaline mushroom are still used by
Mexicans

Plant Ephedra The stems and leaves of ephedra plant
contain ephedrine.



PSILOCYBE MUSHROOM

Psilocybe Mexicana



Psilocybin

Psilocybe semilanceata



*Psilocybe
cubensis*



• *Psilocybine/PsilocybeMushrooms*

- Hallucinogens
- A number of Schedule I hallucinogenic substances are classified chemically as tryptamines.
- Most of these are found in nature but many, if not all, can be produced synthetically.
- Psilocybin (O-phosphoryl-4-hydroxy-N, N-ethyltryptamine) and psilocyn (4-hydroxy-N, N-dimethyltryptamine) are obtained from certain mushrooms.
- Affects mood & Perceptions similar to mescaline & LSD
- Common Street Names
Sacred Mushrooms, Teonanacatl

TEST FOR LSD

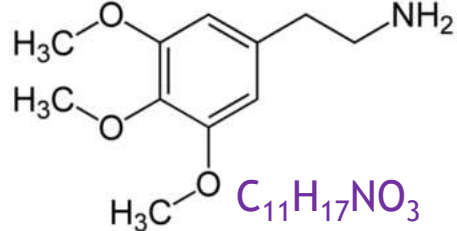
- ▶ PHYSICAL EXAMINATION: MACROSCOPIC, MICROSCOPIC
- ▶ EHLRICH TEST: VIOLET TO GREY VIOLET COLOUR POSSIBLE PRESENCE OF PSILOCIN OR PSILOCYBIN
- ▶ TLC
- ▶ INSTRUMENTATION METHOD

CACTUS



PEYOTE CACTUS





- ❖ *Lophophora williamsii* is a small, button-shaped cactus, known as the peyote, which grows in Mexico and the South-Western United States of America.
- ❖ This cactus rarely grows more than an inch above the ground and can take five to fifteen years to mature.
- ❖ The principal psychotropic alkaloid of peyote is mescaline (3,4,5-trimethoxyphenethylamine), which is a potent hallucinogen.
- ❖ Mescal Buttons (Peyote Buttons), the form most commonly found in the illicit traffic are the dried, brown, disk-shaped tops of the cactus.
- ❖ Mescaline can easily be synthesized in clandestine laboratories, for example starting from 3,4,5-trimethoxybenzaldehyde.

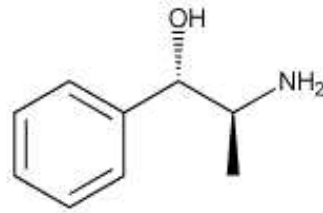




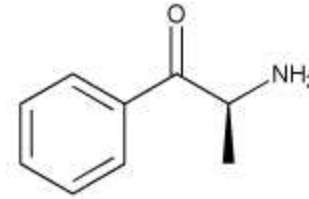
Khat

- ❖ **Khat** are the young tender shoots or leaves of *Catha edulis*, which is a flowering evergreen shrub or small tree.
- ❖ *Catha edulis* is 10 to 20 feet tall and grows in eastern Africa, and Southern Arabia – more specifically in Yemen, Ethiopia, Kenya, Madagascar, Somalia and Tanzania.
- ❖ Khat is collected daily in the morning and chewed. It has a **stimulant** effect due to its ephedrine-like components (Cathinone and Cathine).

Cathine, $C_{12}H_{16}N_2O$



Cathinone



- ❖ It creates alertness and freedom from hunger and fatigue.
- ❖ It has no recognized medical applications and its action appears to be wholly detrimental in the long run.



LSD

Crystalline LSD is dissolved in alcohol and the drops of the solution are put on blotter paper.

Blotter papers, gel or tiny tablets(50mg) of LSD are common dosage form.

Dextrose, lactose, mannitol, maize and potato starch are used as diluents(fillers).

Starch, gelatin, ethyl cellulose are used as binders.

Talc (mg-silicate) ,mg-stearate are used to lubricate the particles.

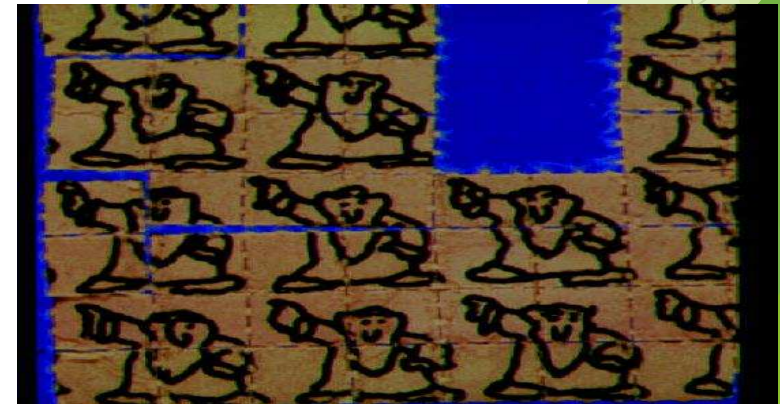
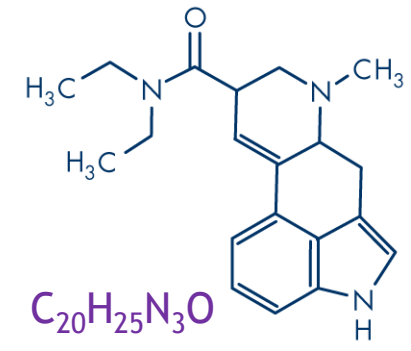
The dosage units bear coloured designs featuring cartoon characters.



LSD BLOTTER PAPER

D – Lysergide (LSD)

- ❖ Lysergic acid diethylamide (LSD) is an indole alkaloid.
- ❖ LSD is a semi-synthetic drug derived from lysergic acid, an alkaloid found in *Claviceps purpurea*, a fungus which grows on rye and other grains (ergot).
- ❖ LSD is a colourless, tasteless, odourless, crystalline substance which is soluble in water or alcohol.
- ❖ LSD is sold in tablet, capsule, and liquid forms as well as in pieces of blotter paper that have absorbed the drug.
- ❖ LSD is one of the most potent hallucinogens known to man. It can cause hallucinations that can last for about 12 hours.
- ❖ The physical effects include dilated pupils, higher body temperature, increased heart rate and blood pressure, sweating, loss of appetite, sleeplessness, dry mouth, and tremors.
 - ❖ The two long-term disorders associated with LSD are persistent psychosis and hallucinogen persisting perception disorder (which used to be called “flashbacks”).



- ▶ COLOUR TEST: EHRLICH TEST: VIOLET COLOUR
- ▶ TLC
- ▶ INSTRUMENTATION METHOD

SYNTHETIC NARCOTICS

In contrast to the pharmaceutical products derived from opium, synthetic narcotics are produced entirely within the laboratory.

The continuing search for products that retain the analgesic properties of morphine without the consequent dangers of tolerance and dependence has yet to yield a product that is not susceptible to abuse.

A number of clandestinely produced drugs, as well as drugs that have accepted medical uses, fall within this category.

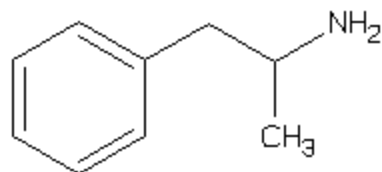
AMPHETAMINES

- ▶ Developed to treat narcolepsy.
- ▶ Students, Night Watch Men and Truck drivers use to keep awake.
- ▶ Ladies use to reduce weight.
- ▶ Known as SPEED - Athletes use to enhance performance.
- ▶ Other names : Dexerine, dexamohetamine , biphetamine.
- ▶ MARQUIS TEST: ORANGE TO BROWN COLOUR
- ▶ SIMONS TEST: NLUE GREEN COLOUR
- ▶ TLC
- ▶ INSTRUMENTATION METHOD

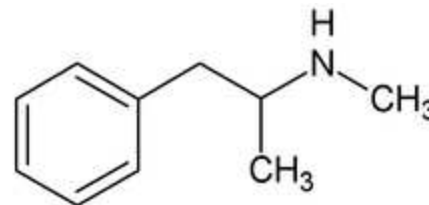


Amphetamine and related substances

- ❖ Amphetamine and related substances are synthetic, chemically related substances with stimulant effects on the central nervous system.
- ❖ Amphetamines are sometimes known as “uppers” or “speed”.
- ❖ Amphetamine and methamphetamine, often injected intravenously, cause an initial “rush”, followed by an intense feeling of pleasure. This is followed by a period of exhaustion and a prolonged period of depression.
- ❖ Common Substances are:



Amphetamine
 $C_9H_{13}N$



Metamfetamine
 $C_{10}H_{15}N$



Pemoline
 $C_9H_8N_2O_2$

Amphetamines

- Synthetic, Chemically related with **Stimulants**
- Stimulates CNS

- **Common Substances**

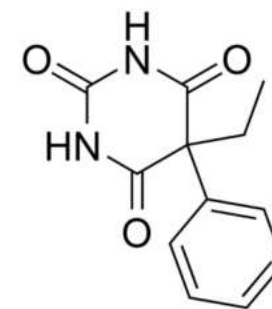
- Amphetamines
- Methamphetamine
Beauties, Downers
- Pemoline
- Amphetamines consumed by actors and actresses for weight loss.

- **Common Street Names**

- Amp, Hearts, Rippers
- Black
- meth, fire.

Barbiturates

- ❖ *Barbiturates are sedative hypnotics.*
- ❖ *They act as central nervous system depressants.*
- ❖ *In small doses barbiturates are used to reduce restlessness, emotional tension and to induce sleep.*
- ❖ *Barbiturates, or “downers”, are normally taken orally and create a feeling of well-being, relax the body, and induce sleep.*
- ❖ *Common Barbiturates are:*
 - ❖ *Long acting – phenobarbital*
 - ❖ *Intermediate acting-amobarbital*
 - ❖ *Short acting- pento barbital*
 - ❖ *Ultrashort acting-thiopental sodium*



Phenobarbital

- ▶ Color test: Dille-Koppanyi test:Solution 1: Dissolve 0.1g of cobaltous acetate tetrahydrate in 100ml of absolute ethanol.
- ▶ Add 0.2ml glacial acetic acid
- ▶ Solution2: mix 5ml of Isopropylamine with absolute methanol
- ▶ Suspected material is taken in a depression spot plate. Add three drops of solution 1 followed by three drops of solution 2.Purple color indicates the presence of Barbiturates .
- ▶ TLC
- ▶ Instrumentation method:GC,GC-MS,HPLC,HPTLC,FTIR,UV Spectrometry.

BARBITURATES



Tuinal



Sodium Amytal



Madomin



Nembutal



Amytal



Phenodorm



Sodium Seconal



Soneryl



Epanutin

Pethidine

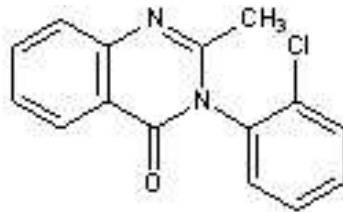
- Synthetic Narcotic Analgesic
- Actions similar to that of Morphine.
- Demorol
- Dolanatin
- Meperidine

Methaqualone

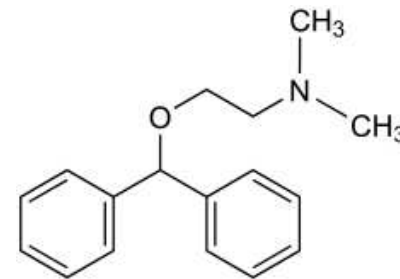
- ❖ *Methaqualone is a non – barbiturate synthetic sedative drug.*
- ❖ *The two sources of illegally distributed methaqualone and mecloqualone are diversion from legitimate pharmaceutical trade and illegitimate manufacture in clandestine laboratories.*
- ❖ *The combination product, Mandrax, containing methaqualone and diphenhydramine, is a controlled drug preparation.*
- ❖ *Diphenhydramine is an antihistamine.*



Methaqualone
 $C_{16}H_{14}N_2O$



Mecloqualone
 $C_{15}H_{11}ClN_2O$



Diphenhydramine
 $C_{17}H_{21}NO$

- ▶ Cobalt thiocyanate test: blue colour positive for methaqualone or mecloqualone
- ▶ TLC
- ▶ Instrumation method

Methaqualone

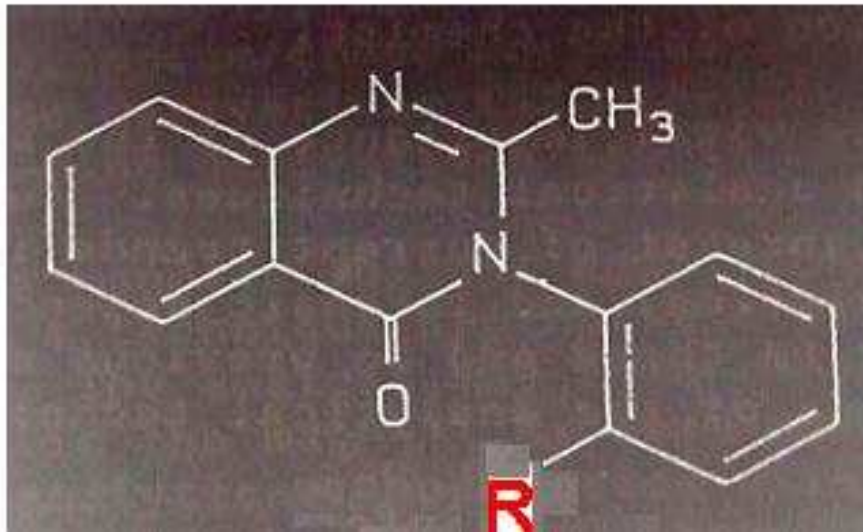
» Non-Barbiturate Synthetic Sedative drug

- Common illicit forms
- Brown, grey or black powder
- Tablets or Capsules
- Common Street Names
- Mandrax
- Quaalude





MANDRAX
Prodorm/Nindra
(METHAQUALONE)



R=CH₃ Methaqualone

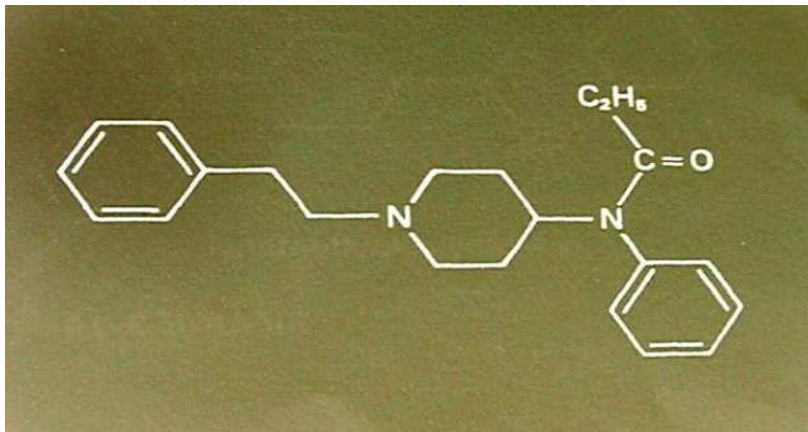
R=Cl Mecloqualone

**R=SH Designer drug of
Methaqualone**

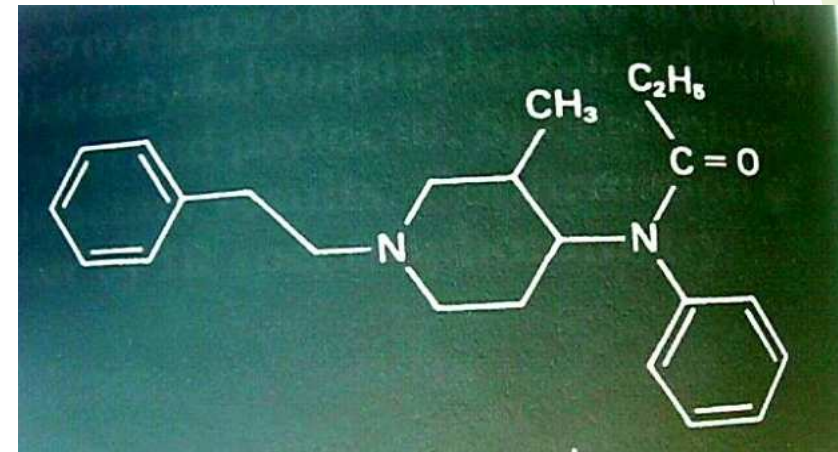
FENTANYL

Fentanyl is a synthetic Opiod medicine.

- ▶ Term designer coined for analogues of fentanyl.
- ▶ New drugs skirting controlled substances law designed with a little changed structure with same or enhanced effect than parent drug.



Fentanyl :
100 X morphine



3-Methylfentanyl : 10000 X morphine

FENTANYLS IN NDPS ACT:

- ▶ Fentanyl is a pain media and Anaesthesia. Fentanyl, Acetyl-alpha-methylfentanyl, Alfentanil, Alpha-methylfentanyl, Alpha-methylthiofentanyl, Beta-hydroxyfentanyl, Beta-hydroxy-3-fentanyl, 3-Methylfentanyl, 3-Methylthiofentanyl, p-Fluorofentanyl, Sufentanil, Thiofentanyl.
- ▶ Under NDPS Act - Small quantity 5 mgs, commercial quantity 100 mgs
- ▶ Carfentanil 1 gm produces 1.2 million doses - not under NDPS Act

Phencyclidine (PCP)

❖ Phencyclidine is a synthetic drug with anesthetic and hallucinogenic properties.

Rave drugs

Club drugs, also called rave drugs, or party drugs are a loosely defined category of recreational drugs



**Ecstasy-MDMA-METHYLENE
DIOXY METH AMPHETAMINE.**

Activities
in the
Narcotic
Division of
Forensic
Sciences
Department

Whether the seized drug is NDPS
drug or not ?

If it is NDPS drug, what is it?

KETAMINE:

- ▶ It has analgesic and anesthetic property. It is abused by criminals in drug facilitated sexual assault cases.
- ▶ Ketamine is a novel compound that was derived from Phencyclidine. Ketamine is a short acting anaesthetic.
- ▶ It is a NMDA Receptor Antagonist.
- ▶ Has a formula $C_{13}H_{16}ClNO$.
- ▶ Can be identified by TLC and Instrumentation Methods.
- ▶ G-C, GC-MS, HPLC, FTIR, UV SPECTROSCOPY.

COLOUR TESTS

- ▶ Marquis test - Opiates, methadone, many drugs
- ▶ Duquenois-Levin test - cannabinoids
- ▶ Chen's test - Ephedrine, cathinone
- ▶ Simon's test - Amphetamines
- ▶ Zimmermann test - Benzodiazepines
- ▶ Ehrlich reagent test - Ergot alkaloids, LSD
- ▶ Scott test - Cocaine
- ▶ Mecke test, Frohde test - Heroin, opiates, PCP
- ▶ Fischer-Morris test - Methaqualone
- ▶ Dille-Koppanyi test, Zwicker test - Barbiturates

Drugs - Health Hazards

- ▶ **How frequently** an addict consumes drug.
- ▶ **The quantity of the drug.**
- ▶ **How potent** the drug.
- ▶ **How concentrate** the drug.
- ▶ **How healthy** the addict is.
- ▶ **The mode of administration** of the drug,
by oral, Intravenous / Intramuscular, sniffing.
- ▶ **Duration of lifespan / Death fixed by drug addict by themselves by consuming drugs.**
- ▶ **Hence Drugs are dangerous to health.**

CONCLUSION

- * Loopholes in the Drug BAN policies.
- * We should have a knowledge on the current trend of drugs that are prevailing in our Country / State / our Jurisdiction, etc...
- * Based on the trend of drugs, drug abuse, we should update to the apex authority.

WHY EFFORTS TO CURB Drug use Fail?

What can be done about it?

- * **Updating the act by bringing about new amendments with more stringent measures...**

Bill presented in the parliament.