Somniferous poisons

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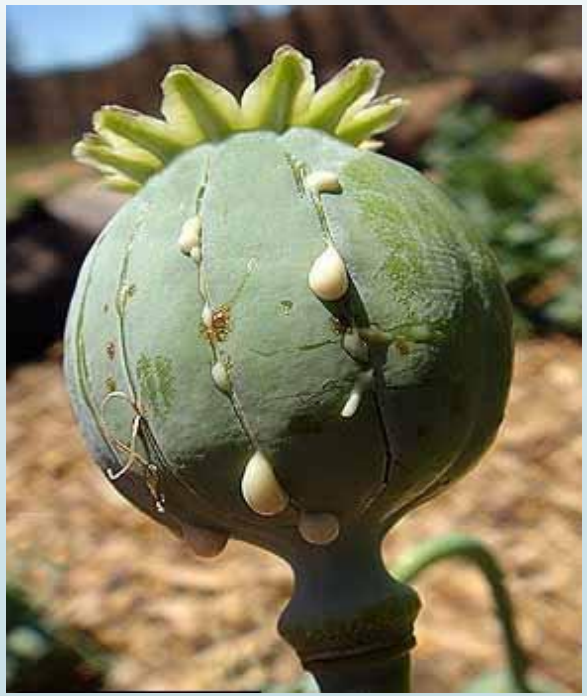
- Narcosis means : **to induce sleep.**
- Somniferous poisons refer to : agent capable of inducing sleep .
- Narcotic drugs were the term employed to categorize these agents :
- Examples:

1. Opium
2. Morphine
3. Heroin
4. Codeine

OPIUM

- Common name: **Afim**
- Opium (afim) is dried extract of the poppy plant (**Papaver somniferum).**



Unripe poppy capsule

khaskhas

Features:

- Opium plant grows up to :0.3 - 1.5 meter in height .
- Plant bears whitish color flower with 5-8 capsules.
- **Unripe opium capsules** are incised to obtain the extract : which is milky fluid.
- The milky fluid on drying yields opium.
- Crude opium : is irregular mass of brownish in color with a characteristic smell & bitter taste.
- **Poppy seed (khaskhas)** : white seeds
- Opium plants are cultivated under license in India in state of **Rajasthan , UP& MP.**

Active principles: Opium contains alkaloids ,which are divided into 2 groups:

Phenanthrene group :have narcotic properties.

- Morphine
- Codeine
- Thebaine (non-analgesic)

Benzoisoquinoline group: mild analgesic but no narcotic properties:

- Papaverine
- Noscapine (narcotine)

Classification:

1. **Natural :** Morphine , Codeine

2. **Semi synthetic :** Heroin, Hydro morphine , Oxy morphine.

3. **Synthetic :** Meperidine , methadone , fentanyl etc.

Mechanism of action:

- Opioids acts by acting on specific opioid receptors.
- Opioid receptors: **mu, delta or kappa** , located at spinal & supraspinal sites in CNS.
- Opioid receptors are part of G-protien coupled receptors & act to open potassium channels & prevent the opening of voltage gated calcium channels : which **reduces neuronal excitability & inhibits the release of pain neurotransmitters.**
- **Mu 1 receptors:** analgesia , euphoria & dependence.
- **Mu 2 receptors:** respiratory depression & inhibition of gut motility .
- **Kappa receptors :** analgesia @ level of spinal cord.
- **Delta receptors:** in humans role is not clear.

Clinical features :

Stage of excitement	Stage of stupor	Stage of narcosis
• Stage is short • Person feel better with increased sense of wellbeing. • Talkativeness • Restless or hallucination • Flushing of face .	• Headache • Nausea • Vomiting • Giddiness • Drowsiness • Miosis • Stupor	• Patient passes into deep coma • **Muscles:** flaccid • **Reflexes:** diminished or absent • Hypothermia • Hypotension • Bradycardia • Bradypnea • Non cardiogenic pulmonary edema • Convulsions • Respiratory depression • Death

- **Classical triad for opioid poisoning : miosis , coma & respiratory depression.**
- There may be abdominal distension
- Retention of urine
- **Fatal dose:**

1. Crude opium : 500mg
2. Morphine :200mg
3. Heroin:50mg
4. Pethidine:1 gm

- **Fatal period :** 6-12 hours.

- **Blood tests for opium detection :**

1. Marquis test (M)
2. Deninges test (D)
3. Husemann test (H)

- Antidote : naloxone :2mg'

Comatose : coma cocktail.

- **In opium intoxication all secretions decrease except sweat** .
- **Under withdrawal:**

- Insomnia
- Increase respiratory rate
- Increase heart rate
- Dysphoric mood
- Increase BP
- Mydriasis

Management :

- Oxygen / assisted ventilation.
- Fluid & vasopressors
- Gastric lavage
- Lidocaine : for ventricular tachyarrhythmia
- Naloxone: potent antagonist .
- Recently introduced antidote : **Nalmefene .**
- Nalmefene >>> Naloxone

Differential diagnosis:

- Alcohol intoxication
- Barbiturate poisoning
- Carbolic acid poisoning
- Carbon monoxide poisoning
- Uremic coma
- Diabetic coma
- Hysteria
- Cerebral hemorrhage
- Head injury
- Cerebral malaria
- Meningitis
- Heat hyperpyrexia

Autopsy findings:

- Signs of asphyxia
- Froth at mouth & nostrils
- Face & nails cyanosed
- Smell opiate may present
- Injection marks / skin abscess / scarring in addicts.
- Blood : dark & fluid
- Pulmonary edema
- Cerebral edema.
- Opium disapperars rapidly from cadaver.

Medicolegal importance :

- Drug abuse
- Accidental death due to drug overdose
- Suicide may be attempted for painless & peaceful death.
- Cattle poison.
- Doping for horse race.
- Homicide rare
- Infanticide.
- Used in euthanasia.

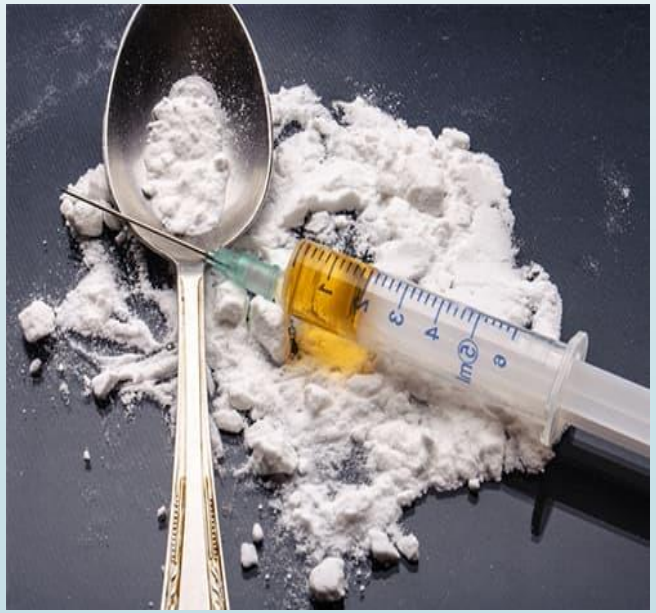
Heroin(brown sugar)

- There are three types of heroin : white , brown & black tar .
- Street heroin is known as" **smack junk or dope**" , & is diluted with quinine , lactose , mannitol.
- **Heroin + cocaine = speedballs.**
- It is not taken orally because it is rapidly hydrolysed in the stomach .
- **Most dangerous among all drugs of addiction** .
- Solid heroin : diacetyl morphine : dissolved in a liquid & injected or it can be heated & smoke or vapor inhaled (**chasing the dragon)** or used as snuff .
- **Fatal dose: 50mg.**

- It is metabolised to monoacetyl morphine or acetylmorphine.
- Monoacetyl morphine hydrolysed to : morphine : in 30-60 minutes.
- Chemical analysis willl detect morphine but not heroin.

- If adulterated & mix some drug with heroin :k/a **Cutting in**

- **Fructose**
- **Mannitol**
- **Quinine**
- **Talc**
- **Chalk powder**



Treatment:

- **Methadone 40mg** : daily will usually prevent withdrawal symptoms .
- In chronic addict :80mg
- The dose is gradually reduced by 20%
- **Detoxification.**
- **Narcotic antagonists :** naltrexone, naloxone, haloperidol , clonidine & cyclazocine .

Autopsy

- Lungs: heavy & congested
- Severe pulmonary edema.
- Microscopically : lungs show foreign body granulomas.
- Liver: chronic triaditis with mononuclear cell infiltrates.

Methadone

- **Long acting opioid .**
- Halflife :15 hours.
- All physiological properties of heroin.
- Analgesic more powerful than morphine.
- Can be given orally or parenterally.

Meperidine (pethidine)

- Meperidine hydrochloride is :
- Colorless
- Crystalline powder with bitter taste
- **Administered** :IM or IV route for its analgesic , antispasmodic & sedative properties.
- **Action :** It acts on cerebrum & produce analgesia & sedation.
- **Fatal dose:** about **2gm**
- **Fatal period: 24 hrs**
- It is drug of addiction.

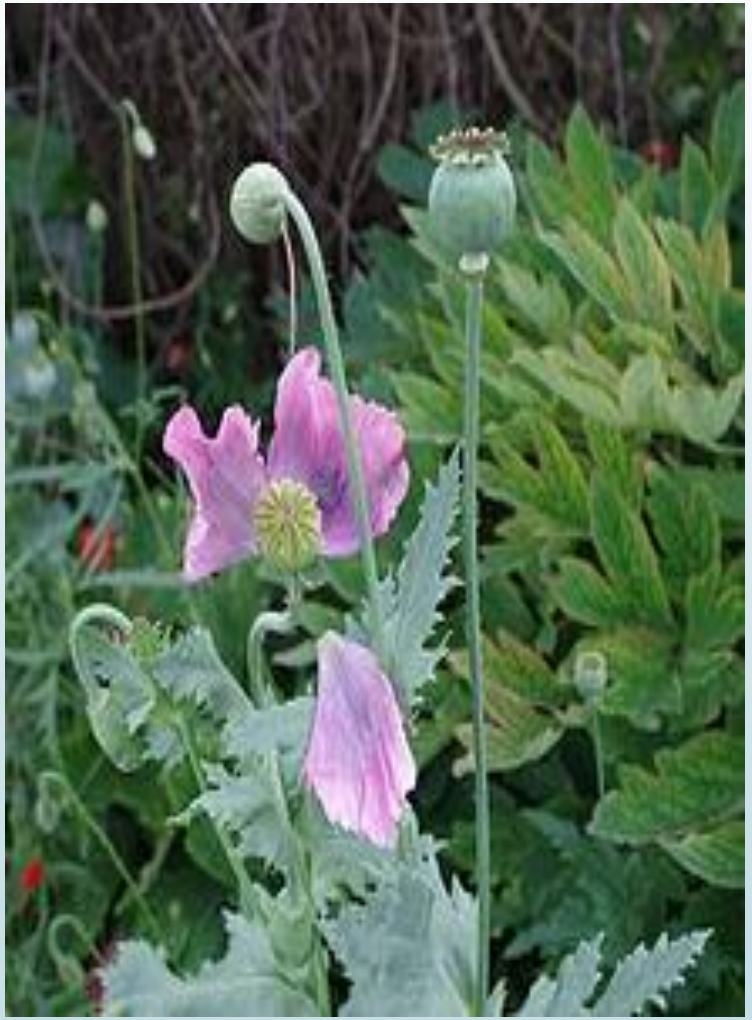
Q1: Regarding the plant shown in the image ,the toxic prnciple is derived from which of the following?

a) Seeds

b) Unripe fruit capsule

c) Flowers & leaves

d) Roots



Q2: In case of opioid intoxication , the most important treatment step is ?

a) Airway protection and ventilatory maintenance.

b) Gastric lavage & activated charcoal administration

c) Intravenous naloxone administration .

d) Administration of intravenous dextrose & thiamine.

Q3: Speed ball refers to a combination of heroin with which drug?

a) Alcohol

b) Cocaine

c) Cannabis

d) LSD

Q4: All are adulterants of heroin , excepts :

a) Chalk powder

b) Quinine

c) Charcol

d) Fructose

Q5: The method shown in the image below is used for takin heroin. What is it called?

a) Mainlining

b) Insufflation

c) Chasing the dragon

d) Skin popping.

Answers:

1. B
2. A
3. B
4. C
5. c

Thankyou