

Somniferous poisons

Somniferous means **“sleep inducing”**

It includes opium and its derivatives



OPIUM

- **Plant : (Papaver somniferum)**
- Herb growing upto 1mt.in ht. Each plant has 5-8capsules which on **incised in unripe state extract a milk fluid which on drying yields opium.**
- Plant grows well in India but its **cultivation** is banned except **on license obtained from Central Govt.**
- For preparation of drugs like morphine, pethidine, codeine & such license is issued only for states of Madhya Pradesh, Rajasthan & Uttar Pradesh.

Physical appearance

- **Crude opium** is **dark brown** with **irregular & flattened mass** having characteristics **odour & bitter taste**.
- **Poppy seeds(Khaskhas/Posto):**
 - do not contain opium & used it as a food. It also yields oil which is used for cooking & illumination purpose.
 - 1gm contains about 3500 seeds.
 - Constituents of oil: palmitic acid, steric acid, oleic acid, linoleic acid.







TWO CHEMICAL FORMS OF CRUDE OPIUM

Phenanthrenes
(mainly narcotic effect)

Morphine
(10%)

Codaine
(0.5%)

Thebaine
(0.3%)

Isoquinoline
(mainly analgesic effect)

Papaverine
(1%)

Narcotine
(6%)

OPIUM AND ITS DERIVATIVES (CLASSIFICATION)

NATURAL : morphine, codeine

SEMI SYNTHETIC: heroin,
oxycodone

SYNTHETIC: methadone, fentanyl

- Opiates, having chemical similarity with chemical substance known as 'Endorphins' activates following receptor sites:
- μ (mu) receptors - analgesia, euphoria, responsible for spinal analgesia, respiratory depression, physical dependence
- κ (kappa) receptors - sedation, spinal cord analgesia
- δ (delta) receptors - Antitussive (coughing) properties, emesis (vomiting), and anticholinergic (constipation)

- Opium depresses all centers except oculomotor centre, vomiting centre & sweating

- **Pharmacokinetics** : Absorbed through all mucus membrane, metabolized in liver & excreted through kidney, intestine, milk & saliva.
- **Fatal dose** :
Crude opium: 1gm
Heroin: 50mg
Morphine: 200mg
- **Fatal period** : 8-12hrs

Clinical features

They are different in

1. Acute poisoning
2. Chronic poisoning
(Morphinomania/Morphinism)

Acute poisoning

- On skin: erythema, urticaria & itching dermatitis ,
e/o smell of opium(raw flesh like)
- (1)STAGE OF EXCITEMENT**: increase mental activity, talkativeness, freedom from anxiety
- (2)STAGE OF STUPOR**: headache, nausea, vomiting giddiness & drowsiness
- (3)STAGE OF COMA**: reflexes are abolished, BP low, muscles flaccid & relaxed, pulse slow, breath rate low, skin is cold, temp. subnormal, face pale.
-respiratory depression characterized by Cheyne Stoke respiration, cyanosis& froth at mouthy & nostril

Acute poisoning

- Look for **7 characteristic signs**:
 - 1) Pupils: pinpoint**, not reacting to light
 - 2) R/R decreased
 - 3) Pulse decreased
 - 4) Temp decreased
 - 5) Odour: characteristic (raw flesh like)**
 - 6) Skin: moist, perspiring
 - 7) Coma

Chronic poisoning (Morphinomania/Morphinism)

- It results d/t regular use of opium & its preparations either medically or as an aphrodisiac
- It is characterized by following features:
 1. Dry skin with multiple linear scar marks & tattooing
 2. Dermal abscess, furrowed tongue, indigestion (constipation), contracted pupil, anorexia, emaciation
 3. compulsion to continue the use of drug & to procure it by any means, lying, stealing or committing any crime.

Treatment

- Gastric lavage with KMnO_4 (1:5000 dilution) till colour of it comes to normal as it oxidizes opiates.
- **Specific antidote: Naloxone**, 0.8mg (i.v/i.m) every 15 min. (max. 10mg given)
- CNS stimulants: methyl amphetamine
- **COMA COCKTAIL**: IN COMATOSE pt. WHERE IDENTITY OF POISON IS NOT KNOWN 100ml GLUCOSE, 100mg THIAMINE & 2mg NALOXONE i.v.

DIFFERENTIAL DIAGNOSIS

1. **OPIUM POISONING** :- Odour of breath, slow pulse and moist perspiring, respiratory depression.
2. **ACUTE ALCOHOLIC POISONING** :-Odour of alcohol in breath, congested eyes, hyperaemia etc.
3. **BARBITURATE POISONING**:-Shallow resp., deep coma, subnormal temp., pulse, dilated pulse.
4. **CARBOLIC ACID POISONING**:- Odour of breath, white patches on lips & mouth,& carboluria.
5. **MENINGITIS**:- Fever, CSF changes.

DIFFERENTIAL DIAGNOSIS

6. **CARBON MONOXIDE POISONING**:-Intermittent convulsions, cherry red colour of skin, carboxyHb
7. **EPILEPTIC COMA**:-Seizures, pupils dilated, face lips cyanosed, froth at mouth & resp; skin flushed.
8. **URAEMIC COMA**:-Pallor, Chyenne-stokes resp; ammoniacal odour, anascara, convulsions, albuminuria, haematuria & casts in urine.
9. **DIABETIC COMA**:-Low i.o.t. odour of acetone, sugar & acetone in urine, flushed face, subnormal temp.
10. **HYSTERIC COMA**:-Usually in females with history of convulsive movements & in presence of audience, unusual attitude, reflexes not altered.

DIFFERENTIAL DIAGNOSIS

11. **CEREBRAL HAEMORRAGE**:-Old age, HT, paralysis, slow & full pulse, increase temp; Chyne stokes resp; bilateral extensor plantar response.
12. **CEREBRAL MALARIA**:-Fever with rigors, enlarged spleen, hyperpyrexia.
13. **BRAIN TRAUMA**:-Head injury, bleeding from nose, mouth or ears, irregular rapid resp. paralysis of cranial nerves, subconjunctival hemorrhage, pupils inactive.
14. **ENCEPHALITIS**:-Fever, ocular palsies, CSF changes.
15. **HEAT HYPERPYREXIA**:-Circulatory collapse, convulsions, absence of sweating, dry skin, congested conjunctivae & contracted pupils.

POST MORTEM APPEARANCES

Signs of asphyxia, face and nail cyanosed, froth in mouth and nostrils ,pupils are contracted , **P.M. lividity black**

- **Smell of opium** on opening chest, stomach contains small lumps of opium, trachea & bronchi covered with froth
- Lungs edematous & congested
- Brain, meninges & abdominal organs congested
- Blood dark

Medicolegal aspects

- Suicidal poison as death is painless & rarely used for homicidal purpose as it has characteristics odour & bitter taste.
- Used as infanticide: Breast feeding of an infant by smearing of tincture of opium over nipple.
- Accidental poisoning results d/t overdose.



Heroin (Diacetylmorphine)

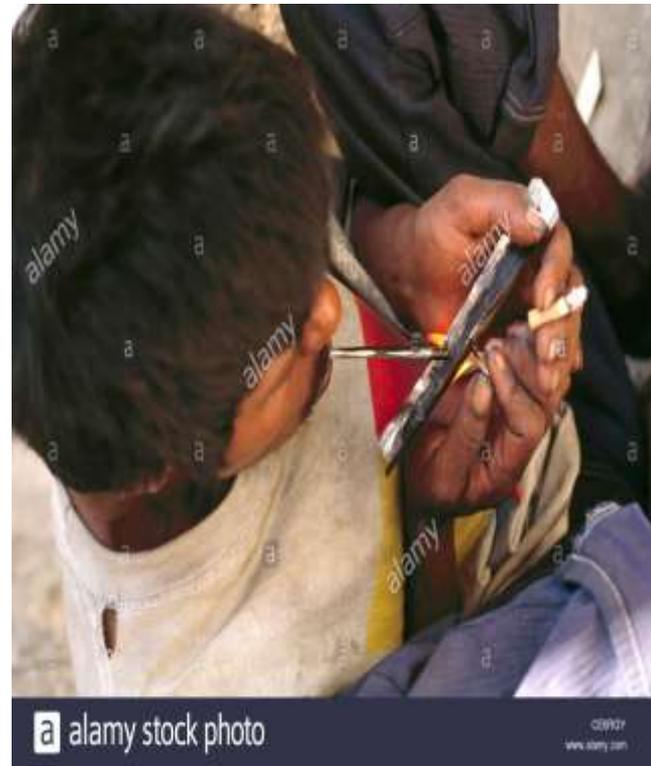
- Synthetic derivative of opium & available as white/dark brown powder.
- It has potent narcotic analgesic with strong euphoric effect. It is 2-3 times more potent than morphine.
- It can be sniffed, smoked, injected or rubbed over buccal mucosa.

Heroin (Diacetylmorphine)

- It is available in 2 distinct forms:
 - 1) Salt (hydrochloride): is typically white powder. It was the common form of heroin available prior to 1980. It's high water solubility allows i.v and im administration.
 - i.v administration: is called mainlining, & users are known as **mainliners**. Such users gets needle track ulcers.
 - i.m/sc administration: if user cannot locate vein, he would lift skin and inject it (**skin popping**).Such users get map shaped ulcers (geographical ulcers)

Heroin (Diacetylmorphine)

- 2) Base (alkaloidal base): is currently more prevalent form of heroin. Its color is brown (brown sugar) or black (black tar heroin).
- Brown sugar: it acquires brown color because heroin may be mixed with coffee powder, coco, jaggery or even brick powder by dealers
 - Black tar: refers to impure variety. It is black, heat stable, insoluble in water, rubber-like.



Heroin (Diacetylmorphine)

- **Additives of heroin:**

Heroin is mixed with additives is known as dope, junk, or smack. Common additives are:

- Quinine
- Scopolamine
- Strychnine
- Others: acetaminophen, amphetamine, caffeine, cocaine, lead, mannitol, methaqualone & thallium. Thallium is common component which are used to increase the weight of heroin

Heroin (Diacetylmorphine)

- Combinations:

Speedball: refers to hazardous iv use of *heroin* & *cocaine* (or *amphetamine*) together.

The combination when smoked is known as **moonrocks**.

Shooting gallery



