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Forensic Medicine

Vegetable Poisons

- Ricinus Communis / Castor / Arandi
 - Found present all over India.
 - Plant : it is a shrub – medium sized, 1-4 m high
 - having green or reddish leaves.

Ricinus Communis

- Leaves : Glossy
15-45 cm long
long stalked
alternate and palmate with 5-12
deep lobes with toothed segments.

Ricinus Communis

- Fruit : Spiny

greenish to reddish purple capsule

containing large, oval, shiny, bean like

highly toxic seeds with variable brownish mottling.

Three seeds per capsule.

Ricinus Communis

- Seeds : Large reddish seeds
Small grey seeds
- Poisonous parts : all parts are poisonous
but seeds are more poisonous

Ricinus Communis

- Active principles :
 - Ricin (toxalbumin)
 - Ricinine

Ricinus Communis

- Mechanism of action:
 - Toxalbumin is a ribosome inactivating protein, capable of inactivating ribosomes and hence protein synthesis.

Ricinus Communis

- Signs and symptoms:
 - Ingestion : if swallowed , don't cause poisoning, hard seed coating cannot be digested by gastric juices.

But if seeds are chewed- toxic because Ricin is released.

Nausea, vomiting, diarrhea, abdominal pain.

Dehydration, hypotension, liver and renal failure and death.

Ricinus Communis

- Inhalation : Dust of seeds causes conjunctivitis
cough, sneezing, dyspnea, respiratory failure, death.

Injection : Generalized weakness, myalgias,
hypotension, multiorgan failure, death

Ricinus Communis

- Fatal dose :
5 well chewed seeds.
By injecting Ricin or inhalation : 20 micro gram/Kg.

Ricinus Communis

- Fatal period :
2 days.

Ricinus Communis

- Treatment :
 1. Inotropic support :
 - IV fluids and vasopressors for hypotension.
 2. Activated charcoal.
 3. Gastric lavage.
 4. Whole bowel irrigation.
 5. Demulcents.

Ricinus Communis

- Post mortem changes :
 - GI track mucosa : congested, softened, inflamed, erosion of mucosa.
 - Haemorrhages – in internal organs.
 - Fragments of seeds – found in stomach and intestine.

Ricinus Communis

- Forensic Significance :
 - Accidental : Necklaces made of castor seeds can cause.
 - Suicidal : Can be used. Inject able.
 - Homicidal : Rarely used.
 - Infanticide – Especially in east Africa – in food.
 - Abortifacient – castor oil.
 - Malingering – Powder of seeds apply to eye to produce conjunctivitis.

Abrus Precatorius

- It is a never ending climber and a thin found all over the India twines around trees.



Abrus Precatorius

- Compound leaves having 10-15 pairs of narrow leaflets.
- Leaves are alternate, opposite, feather like.

Abrus Precatorius

Seed pods:

- Upto 3 cm long
- First green when immature.
- On maturing – dry and brown and splits open with 4-6 seeds exposed.



Abrus Precatorius

Seeds:

- Pea size
- Color – scarlet red with large black spot at one end
- Odour less
- Taste less



Abrus Precatorius

- Active Principles:
 1. Abrin (toxalbumin – viper snake venom)
 2. Abrine (amino acid)
 3. Abralin (glucoside)
 4. Abric acid

Abrus Precatorius

- Fatal dose :

Abrin (IV) – 0.1 – 1 microgram/kg – Super toxic
poison

Seeds (ingestion) – 1-2 crushed/chewed seeds

Abrus Precatorius

- Fatal period :

3 to 5 days

Abrus Precatorius

- Site of action:
 - Similar structure to Ricin.
 - Acts the same manner, it is a ribosome inactivating protein, capable of inactivating ribosomes and hence protein synthesis.

Abrus Precatorius

- Signs and symptoms :

- Ingestion :

Immediate (onset few hours to 1day)

GIT – Nausea, vomiting, abdominal pain, bleeding, gastritis, bloody diarrhea.

Pupil – Constricted

Pulse – weak and rapid

Abrus Precatorius

- Delayed (onset 2-5 days)
 - Convulsion.
 - CNS, liver, kidney damage.

Abrus Precatorius

- Injection :
 - Can be injected in the form of SUI.
 - Local - tenderness with edema
 - bleeding from the site and necrosis around the puncture.
 - General – Weakness, unconsciousness,
 - vertigo, tetanic convulsion,
 - drowsiness, coma and death.
 - symptoms are like viper snake bite.

Abrus Precatorius

- Inhalation –
 - Human toxicity has not been reported yet.

Abrus Precatorius

- Dermal contact :
 - No reports of human toxicity

Abrus Precatorius

- Treatment
 - Induce vomiting
 - Gastric lavage
 - Activated charcoal
 - Sodium bicarbonate – 10 gm orally/day
 - Hospitalization.

Abrus Precatorius

- Cause of death:

Cardiac failure

Abrus Precatorius

- Post mortem changes :
 - If ingested: congested, edema, haemorrhagic spots at the gastric mucosa.
 - Congestion of internal organs.
 - If injected : edema of the site, simulate with snake bite, Patechial haemorrhage, infection and necrosis at site.

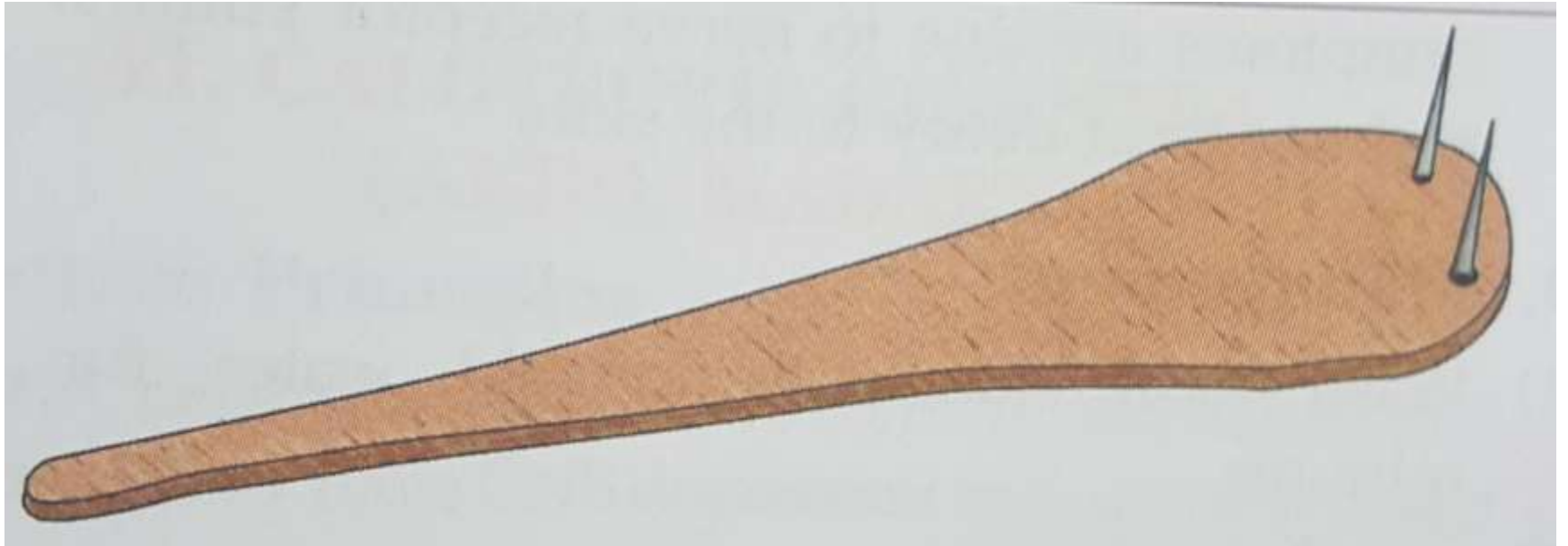
Abrus Precatorius

- Forensic Significance:

1. Cattle poison.
2. Homicidal poison.

In the form of Sui.

Abrus Precatorius



Abrus Precatorius

- Sui:
- Mostly used during the British India time.
- Preparation :
a thin paste of the water soaked, pounded seeds and then dried them up in the sunlight then soaking them to the needle after which it was oiled and sharpened upon the stone, affixed a handle then used to puncture the skin of the animal.
- Slapping.
- Simulating the puncture with the snake bite and features r like it also. Died after 3-4 days.