COMMON POISONOUS PLANTS IN SRI LANKA

Dr. Anuruddhi Edirisinghe
Aththna (Thorn Apple)

Most poisonous flowers/ stem/ fruit/ leaves/roots

Fatal dose: 50-75 seeds

Botanical Name: Datura stramonium

Toxin: Belladonna alkaloids (atropine, hyoscine and hyoscyamine)
Circumstances of Datura Poisoning

- Stupefying purpose
  - Mixed with cigarettes produce state of unconsciousness to facilitate robbery & rape
  - Mixed with sweets (gingerly) robbery & rape
- Accidental poisoning: Children
- Suicidal
- Homicidal: very rare
DATURA POISONING SIGNS & SYMPTOMS

Produce characteristic manifestations of anticholinergic poisoning

- Dryness of mouth
- Dysphagia
- Dysarthria
- Diplopia
- Dry hot and red skin
- Drowsiness leading to coma
- Urinary retention
- Death: respiratory failure or cardiac arrhythmia

Autopsy findings
Seeds in stomach & non specific features
**Divi Kaduru (Eve’s Apple)**

Most poisonous / latex / fruit / seeds

**Botanical Name:** Pagiyantha *dicotoma*

**Botanical Name:** Tabernaemanta *dicotoma*

**Toxin:** alkaloids / strychnine
**Signs & Symptoms of Divi Kaduru Poisoning**

- White latex: inflammation of eye
- Ingestion: dryness of mucus membranes, thirst, dilatation of pupils, rapid pulse, psychomotor disturbances, hallucinogenic effects.
- Accidental poisoning:
- Suicidal poisoning

Autopsy findings: Seeds in stomach & non specific features
GODA KADURU (BITTER NUT)

Most poisonous: Seed
(although all parts toxics)

Fatal dose: 1-2 seeds

Botanical Name: *Strychnos nux vomica*

Toxin: alkaloids (strychnine/brucine)
Circumstances of Goda Kaduru Poisoning

- Strychnine injections are used to kill stray dogs/seeds to kill animals, now found in pesticides (kill rats)
- Suicidal
- Accidental: With traditional medicine
- Homicidal: Very rare (mixed with alcohol)
STRYCHNINE POISONING
SIGNS & SYMPTOMS

- Bitter taste
- Clonic (intermittent) & Tonic (sustained) seizures
- Affects flexor and extensor muscles simultaneously
- Facial Muscles: “risus sardonicus”, “trismus” (locked jaw)
- Opisthotonos
- Respiratory distress and death
- Agonizing death because of consciousness

Autopsy findings No Macroscopic or microscopic features (non specific features), seeds / powder in stomach, poison in blood & urine
Most poisonous: Fruit Kernal

Botanical Name: Cerbera manghas

Toxin: glycocides (Cerberin/odollum and thevetin)
CIRCUMSTANCES, SIGNS & SYMPTOMS OF DIYA KADURU POISONING

- Suicidal: common in Eastern province
- Accidental, Homicidal: very rare
- Burning sensation and dryness of the mouth, nausea, vomiting, diarrhoea and abdominal pain are early features.
- CVS – Bradycardia, hypotension, 1st and 2nd degree heart block atrial and ventricular extrasystoles, ventricular fibrillation. (ECG Changes)
- Convulsions and coma

Autopsy findings (non specific features), kernel of the fruits
Kaneru (Yellow Oleander)

Most poisonous:
Fruit /seed/ all parts of tree
Fatal dose: 2 seeds

Botanical Name: Thevetia peruviana

Toxin: Cardiac glycosides, Thevetin A & Thevetin B.
CIRCUMSTANCES OF KANERU POISONING

- medicinal plant as a folk medicine in many countries as an abortifacient, appetizer, and in the treatment of leprosy, ringworm, malaria and venereal disease
- Suicidal poisoning is very common
- Before 80s it was not reported. Jaffna 2 girls died and highly news coverage in 1983.
- Accidental: children and adults
- Homicidal: very rare
Signs & Symptoms of Kaneru Poisoning

Nausea and vomiting due to the irritant effect of the stomach.

Vomiting 6 to 12 hours after ingestion implies significant absorption of the toxin.

Cardio-toxicity causing bradycardia, varying degrees of heart block and hypotension.

Activated charcoal

Atropine

KaneruTAB
Kaneru (Lorier bol, Rosebay, and Rose Laurel)

Most poisonous: Pod/seed/all parts of tree

Botanical Name: Nerium oleander

Toxin: Cardiac glycosides (oleandrin, nerin)
Figure 1: Intermittent AV Block 15 hours after ingestion
NIYANGALA (Glori Lily)

Most poisonous: tubers/all parts of the plant

Botanical Name: Gloriosa superba

Toxin: Alkaloid Colchicine, Gloriosine, Superbine

Fatal dose: 10g tubers
CIRCUMSTANCES OF NIYANGALA POISONING

- Native practitioners use tuber for the treatment of joint pains, bruises, sprains, colic, chronic ulcers, haemorrhoids, cancer, impotence, nocturnal seminal emissions, leprosy, inducing labour pains and abortion.

- Used in rheumatological and immunological conditions in modern western medicine.

- Accidental poisoning is common (sweet poptato/ Hulankeeriya)

- Suicidal and rarely homicidal poisoning
Signs & Symptoms of Niyagala Poisoning

Dehydration
Hypovolaemia, hypotension, shock

GI features:
abdominal pain, Nausea, Vomiting, Diarrhoea with blood

Niyagala Poisoning

Autopsy findings hemorrhagic features in stomach, intestines, heart, lung, kidney

Death
Resolve
Late

Toxic 6 to 12 hours of ingestion.

Granulocytopenia, thrombocytopenia, clotting defects, bleeding

Cardiac arrhythmias, hepatic, renal and respiratory failure, DIC

Effects on mitosis: alopecia

Fig. 1

Fig. 2
**Weta Enderu (Barbados Nut, Purging Nut, Physic Nut)**

Most poisonous: seeds

**Botanical Name:** *Jatropha curcas*

Toxin: Toxalbumin, Curcin

Fatal dose: 2 seeds cause purging
Trees are now grown commercially to obtain bio-diesel

- The seeds have been used as abortificients, anthelmintics and purgatives
- Poisoning is mainly seen in children as accidental
- Nausea, vomiting, epigastric and abdominal pain and diarrhoea resulting in dehydration, electrolyte imbalance, cramps and shock.
- Other features of poisoning are hypoglycaemia, retinal haemorrhages, haematuria, convulsions, and shock. Hepatic necrosis and acute renal failure have been reported.
Beheth Endaru / Thel Endaru/ Castor Plant

Botanical Name: Ricinus communis

Toxin: alkaloid Ricinin & toxalbumin Ricin

Most poisonous: seeds/plant
Fatal dose: 1 seeds
CIRCUmSTANCES OF BehETH ENDERU POISONING

Oil is used for medical purposes: laxative, treatment of infection and inflammation, in treatment of cancer

industrial raw material for lubricants, paints, coats, cosmetic products

press cake of the seeds: after detoxification used as additive in organic fertilizer, or animal feed (animal poisonings: dog/horse/sheep)

Accidental ingestion of seeds by children

Occasional suicide ingestion of seed extracts / oil (oral/parental/ IM)

As a weapon of bio-terrorism (aerosol) (IM)
SIGNS & SYMPTOMS OF BEHETH ENDERU POISONING

- Symptoms seen after 3 to 20 h
- Abdominal pain, emesis, diarrhea with or without blood, muscular pain
- Cramps in the limbs, circulatory collapse, dyspnoea and dehydration

Late features: liver and kidneys dysfunction

Injected ricin: pain at the injection site, muscular necrotizing,

Autopsy: haemorrhagic necrosis in intestines and heart and oedema in lungs
Botanical Name: *Adenia palmata*

Toxin: cyanogenic glycoside and toxalbumin

Most poisonous: Fruits seeds
Circumstances, Signs & Symptoms of Hondala Poisoning

Closely resembles passion fruit, responsible for accidental poisoning among children.

1. Vomiting, fever, restlessness, dizziness, disorientation, abdominal pain and diarrhoea.
   2. Necrotising enteritis leading to diarrhoea with blood and mucus, abdominal colic, tenderness over the right iliac fossa.
   3. Myocarditis, tender hepatomegaly and retinopathy occurs 2-3 weeks after ingestion.

Clinical features: 3 phases
Olinda/ Crab eyes/ Rosary bean/ Jequirity bean

Botanical Name: Abrus precatorius

Most poisonous: seeds
Toxin: Toxalbumin called Abrin

Fatal dose: 1 seed
Circumstances, Signs & Symptoms of Olinda Poisoning

- Used in native medicine and ornamental makings
- Accidental poisoning by children
- Nausea, vomiting, diarrhoea and abdominal cramps, haematemesis and melaena.
- Hepatotoxicity
- Haemaglutination, haemolysis of red cells, hypovolaemic shock and direct toxic effect on kidneys lead to acute renal failure.
- Retinal haemorrhages, anaemia, hypoglycaemia, drowsiness and convulsions
**Kapum Kiriya/Coral Plant**

*Botanical Name: Jatropha multifida*

Toxin: Toxalbumin  Jatropin

Most poisonous: seeds

Fatal dose: 1 seed
CIRCUMSTANCES, SIGNS & SYMPTOMS OF KAPUM KIRIYA POISONING

- It is called ‘kapum kiriya’ because latex of the plant is applied to wounds and ulcers.
- In Africa the leave juice is used for Oral candidiasis.
- Commonly seen as accidental poisoning in children.
- Clinical features are: nausea, vomiting, abdominal pain, diarrhoea, shock.
- Known to mimic organo-phosphate poisoning.
Botanical Name: *Euphorbia hirta*

Toxin: Alkaloid xanthoramine, gallic acid, phenolic substance

Clinical effects: Nausea, vomiting, and drowsiness, Observe for cyanide poisoning features
Manyokka / Tapioca / Cassava / Manioc

Botanical Name: *Manihot utilissima*

Toxin: Cyanogenic glycosides

Most poisonous: root covering

Improper cooking: Vomiting, abdominal pain, dehydration, loose stools, shock, drowsiness, Collapse, convulsions
Habarala / Elephant’s ear Plant

Botanical Name: *Alocasia macrorrhiza*

Toxin: – Sapotoxin, Calcium oxalate crystals

Most poisonous: stems/leaves
**Botanical Name:** *Dieffenbachia amoena*

**Toxin:** – Calcium oxalate crystals

Most poisonous: stems

Decorative plants in houses
**Botanical Name:** *Caladium andreanum*

**Toxin:** Calcium oxalate crystals

**Most poisonous:** Stems

**Decorative plants in houses:**

**Caladium/ Angel’s Wings/ Rathu Habarala/ Mal Habarala**
Mainly accidental poisoning in children due to chewing of the stems

The name ‘dumbcane’ is used as the cane-like stem can cause instant “dumbness” when chewed

profuse salivation, irritation, burning sensation and pain of the oral cavity

Oedema of the tongue, lips, cheeks, salivary glands and throat lead to disphagia and aphonia.

Ingestion of large amount lead to necrotic oesophagitis and haemorrhagic gastritis.

Death may result from laryngeal oedema.

Bradycardia, tremors, muscle twitching and trismus, convulsions and acute renal failure also can occur
**Dumkola/ Tobacco**

**Botanical Name:** *Nicotiana tabacum*

**Toxin:** – Alcoloid Nicotine

Most poisonous:
leaves, stems, roots, flowers
Accidental in children and adults
Mild: salivation, nausea, dizziness, drowsiness, headache, vomiting, diarrhoea, hand tremor
Serious: mental confusion, circulatory collapse (shallow rapid pulse, ‘cold sweating’), convulsions, loss of consciousness, cardiac arrest, respiratory paralysis
**Botanical Name:** *Myristica fragrans*

**Toxin:** – Myristicin & elemicin

Most poisonous: seeds (nutmeg), aril (mace)

Fatal dose: adults 3 seeds, children 2
Circumstances, Signs & Symptoms of Nutmeg Poisoning

- Used as a spice and has many medicinal use
- Poisoning is usually accidental in children
- Symptoms are usually seen within 3-6 hours after ingestion
- Intoxication resembles anti-cholinergic intoxication i.e. profuse sweating, flushed face, dry mouth, burning epigastric pain, tachycardia, restlessness, giddiness, hallucinations
It was my good fortune to have studied paediatrics under the tutelage of the late Professor C C de Silva. In fact, I belonged to the very last batch of students to have been examined by Professor C C de Silva at the final MRCS examination held in June 1966, just prior to his retirement.

Professor C C de Silva was educated at St Thomas College, Mount Lavinia. After one year at the Ceylon Medical College, he proceeded to the United Kingdom where he passed the MRCS (London) examination, only a handful fewer. In 1938, he was successful at the M.RCP (London) examination. In 1949, he was appointed to the newly created chair of paediatrics, University of Ceylon, which he headed for 17 years. He accepted the challenge of organizing and developing the department of paediatrics from scratch and in the process established the first teaching unit at the Lady Ridgeway Hospital. In 1956, the Royal College of Physicians conferred on him the FRCP (London). Professor C C de Silva was a pioneer in promoting breastfeeding and nutrition. In 1956, he established a nutrition unit at the Lady Ridgeway Hospital. The booklet “Mother your baby” was jointly authored by Professor C C de Silva and Mrs N Visvanathan. Professor C C de Silva also pioneered home visiting and family planning. In 1954, in association with the late Dr T O Abeywardena, he established the Talalle Convalescent Home for malnourished children from Ridgeway Hospital. He was elected President of the Ceylon Paediatric Association from 1955 to 1957. In 1961, he was President of the Ceylon Association for the Advancement of Science. In 1975, he was founder President of the Sri Lanka Nutrition Society. In 1983, he received the Doctorate in Science awarded by the Peradeniya University for services rendered to the University and to the academic field at large.

Professor C C de Silva firmly believed in the aphorism “All work and no play makes Jack a dull boy”. Thus, he readily appreciated my participation in a table tennis tournament during my professional appointment. However, he did not equally appreciate my lack of knowledge about the time required to boil an egg. Professor C C de Silva strode across the paediatric ward like a Colossus and there is no doubt that he put Sri Lanka on the international map of paediatrics. When I sat for the MRCP (UK) in 1974, the first question I was asked at the oral was where I hailed from. When I replied “Sri Lanka”, the next question was whether I knew Professor C C de Silva. Thus, you can imagine with what esteem he was held abroad. Professor C C de Silva was a prolific writer and his publications in national and international journals are plentiful. He was well versed in music, art and literature. “Out steps the Dea” and “Life as I lived it” are two of his non-medical literary efforts. He passed away peacefully on 26th May 1987, soon after he completed his autobiography.

For the Professor C C de Silva memorial lecture I have chosen the topic “Plant poisoning in Sri Lankan children. A hospital based prospective study”

Introduction

Plants have been around for a very long time and are the very essence of life on mother earth. Almost every herb, vegetable and fruit has medicinal properties. “Herbicide” is used to treat pests, “Kampucheka” is used to relieve stomach disorders and “Kosolaka” to treat diabetes. These are given to nursing mothers to increase the flow of milk. “Kosolaka” is rich in vitamin C. “Kosolaka” is known to prolong life, as its leaves are commonly eaten by elephants. Numerous skin diseases are treated with “goyakola”, which is rich in vitamins A and folate, acid and is commercially available. “Kosolaka” has antiseptic
THANK YOU