Poisons: Source, Collection and Value addition

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Introduction

Poisons are defined as materials which by contact with an organism, interfere with its wellbeing and function in a way that causes disorder or death. Whether a substance is classified as a medicine or poison depends chiefly on the circumstances of its action and on the amount used. Use of forest trees for poisons in India has a rich and varied history, intertwining with the subcontinent's traditional medicine, warfare, and local customs (Hanumantha, 2024).

Fig. 1 Bark Extraction

History

Ancient Indian texts, including Vedas (Atharvaveda), Artha Shastra, Agastya Samhita, Charaka Samhita, Sushruta Samhita, and various Ayurvedic scriptures document the use of the plants for traditional medicines, warfare, hunting, rituals, and cultural practices. The Sushruta Samhita, an ancient Sanskrit text on medicine and surgery mentions about various plant-based poisons and their antidotes. Kautilya's Artha Shastra, an Indian treatise on statecraft, economy, policy, and military strategy, mentions about poison usage for military and political purposes (Bhatia & Manhas, 2014).

In Contemporary times, the understanding of these poisons has expanded significantly due to their importance in pharmacological potential along with insecticidal and pesticidal properties.

Fig. 2 Commercially important species used as poison (Krishnamurthy, 2010)

Sources of Poison

A. Bark Poisons: *Albizia procera, Antiaris toxicaria, Berberis aristate, Ougeinia oojenensis, Casearia elliptica,* etc.

B. Root Poisons: *Milletia pachycarpa, Milletia auriculata, Randia dumetorum, Berberis aristate,* etc.

C. Fruit and Seed Poison: *Abrus precatorius, Strychnus nux-vomica, Randia dumetorum, Cleistanthus clollinus, Milletia pachycarpa*, etc.

Collection of Poison

- Barks are sustainably harvested from tree by methods like harvesting one part from the three or four equally divided bark parts of a tree or longitudinal blazes of 45-120 cm, 15-45 cm width of bark is harvested.
- Suitable season and proper girth class is selected for bark harvest with good yield depending on the species.

- Mature fruits are collected sustainably by keeping 1/3rd of the fruits intact in the tree
- Dig up the roots at least 30cm away from the main stem or taproot and collection of only lateral roots is followed.
- After extraction of the bark, root, fruit or seed it is usually subjected to maceration, digestion, decoction, infusion, percolation, Soxhlet extraction, superficial extraction, ultrasound-assisted or microwave-assisted extractions.

References

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Table 1: Commercially important species used as poison (Krishnamurthy, 2010)

Sl No.	Scientific Name	Common Name	Family	Part Used	Product or Chemical	Use (or) Remark
1	*Abrus precatorious*	Crab's eye	Leguminaseae	Seeds	Abrin	Leads to organ failure
2	*Albizia procera*	Safed Siris	Leguminaseae	Bark	COS Saponin	Fish Poison
3	*Anamirta cocculus*	Fish berry	Menispermaceae	Seeds	Pycrotin	Used to stupefy fish
4	*Antiaris toxicaria*	Upas	Moraceae	Latex	Antiarin	Hunting (Cardiac Arrest)
5	*Barringtonia acutangula*	Hijal	Lechythidaceae	Seeds	Barringtogenol C	Fish Poison
6	*Berberis aristata*	Tree turmeric	Berberidaceae	Root	Berberine, Palmatine	Disruption of cell function
7	*Casearia elliptica*	Soap wood	Salicaceae	Bark	Saponins	Used to stun fish
8	*Cleistanthus clollinus*	Oduvan	Phyllanthaceae	Seeds	Cleistanthin	Leads to multi-organ failure
9	*Dioscorea prazeri*	Milk Bush	Dioscoreaceae	Tuber	Allatonin	Fish Poison
10	*Euphorbia tirucalli*	Pencil Tree	Euphorbiaceae	Latex	Diterpene esters	Eye and Respiratory damage
11	*Milletia auriculata*	Pongam creeper	Leguminaseae	Roots	Rotenoids	Fish Poison
12	*Myrica esculenta*	Box myrtle	Myricaceae	Fruits	Tripenoids	Stun or Kill Fish
13	*Ougeinia oojenensis*	karimuttala	leguminaceae	Bark	Flavonoids	Fish Poison
14	*Randia dumetorium*	Indian Madder	Rubiaceae	Roots	Indole alkaloid	Fish Poison
15	*Strychnos nux-vomica*	Kasaraka	Logoniaceae	Seeds	Strychnine	Disorder of Central Nervous system

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