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Research article

ETHNOTOXIC KNOWLEDGE OF POISONOUS PLANTS OF HASSAN DISTRICT, KARNATAKA, INDIA

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ABSTRACT: The paper deals with documentation of poisonous plants of Hassan district. In the presented paper, 32 species of 32 genera belonging to 22 families have been enumerated. The study suggested that the local people are aware of such poisonous plants and their harmful effects, further studies are needed to be determine the identity of toxic phytochemical associated with in the poisonous plants

Key words: Poisonous plants, Death, Livestock, Local people, Hassan

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INTRODUCTION

Poisonous plants are widely distributed all over the world and used for different purpose such as hunting, fishing and treating various diseases (Al-Quran, 2005). These plants used in folk medicine in treating human ailments and animal diseases are considered poisonous and the beneficial effects often occur at lower doses whereas overdose can induce poisoning (Botha and Penrith, 2008).The poisonous part of plants may be bark, roots, latex, leaves, shoots, seeds and in some cases whole plants. Poisonous effects are due to production of substances such as alkaloids, glucosides picrotoxins, resins, saponins, tannins, toxalbumins in the parts of plants, many of which are harmful to humans and animals life, at under certain conditions (Katewa *et al*, 2007). Most of the people not familiar with plants found in and around, that may be potentially harmful if ingested, injected, contact through the skin and most plants cause poisoning in animals only when they are accidentally eaten. The knowledge of these poisonous plants is passed on from one generation to another through local and elderly people. This knowledge is a very important for providing general awareness and toxicological research (Huai and Xu, 2000). The poisonous plants of India have been described by many workers (Battia *et al*, 2014; Katewa *et al*, 2008; Jain, 1999; Caius, 2003; Singh *et al*, 2010, Chopra *et al*, 1984). In Hassan district no work has been done specifically on traditional knowledge of poisonous plants. Present study was conducted in the Hassan district of Karnataka, to tap the ethno toxic knowledge of the local people.

MATERIAL AND METHODS

Study area

Hassan district is situated 12° 13´ and 13° 33´ North latitudes and 75° 33´ and 76º 38´ East longitude and has a total area of 6850 sq km. There are two physiographic regions to Hassan district, the steep Western Ghat from 150-1389 m and the rolling eastern plain at 900 m with occasional hills rising to 100-300 m above the plain. The annual temperature of the study site varies between 35˚C in summers and 14˚C in winters, and average rainfall slightly over 104.07 cm.

Data collection

Field tours were carried out in Hassan district, during survey and collection work, information regarding poisonous plants was gathered from local people. The collected plant specimens from the field along with digital photography and field notes for further processing for herbarium and taxonomical identification. Processed plant specimens to dry, poisoned and mount on herbarium sheets with detailed labelling by following the methods described by Merill (1948), Lawrence (1969) and Jain and Rao (1977). Botanical identification of the species were done with the help of floras (Saldhana and Nicolson, 1978; Saldhana, 1984, 1996) and also collected plant species were cross verified with the help of authentic herbarium specimens of RRCBI, Survey of Medicinal Plants Unit, NADRI, Bangalore. The International Plant Name Index was followed for the botanical nomenclature of species.

RESULT AND DISCUSSION

The study revealed that 32 species of 32 genera belonging to 22 families have poisonous effects on man, fish and animals. The plants are arranged alphabetically, each by its botanical name followed by the family name, local names and notes on harmful effects were reported along with photographs (Table 1 and Plate 1).

Abrus precatorius L.

Argemone mexicana L.

Balanites aegyptiaca (L.) Delie

Cuscuta reflexa Roxb.

Euphorbia nerilifolia L.

Gloriosa superba L.

Mucuna pruriens (L.) D

Thevetia peruviana Merr

Urginea indica (Roxb.) Kunth

Plate 1. Poisonous Plants of Hassan district, Karnataka, India

Family Apocynaceae (4 species) was most represented family, followed by Asteraceae, Euphorbiaceae (3 species each), Fabaceae, Solanaceae, Asclepiadaceae (2 species each). Sixteen families are represented by only one species each. Of all the species collected, herbs were observed to be the most dominant, followed by shrub, trees and under shrub. *Thevetia peruviana* planted in roadside for its attractive flowers, but consumption has lead to death and also reported that the seeds of *Thevetia peruviana* are used as abortifacient, and purgative in rheumatism (Singh *et al*, 2012). *Parthenium hysterophorus* occurs everywhere as a weed, ingested by livestock was found to cause chronic or acute toxicity, due to the presence of parthenin (Narasimhan *et al*, 1984). *Agave sisalana* sap from the leaves was an irritant contact dermatitis and also when the sharp leaf tips puncture the skin (Nellis, 1997). *Gloriosa superba* and *Urginea indica* tubers was used to kill animals. *Asclepias curassavica, Dieffenbachia seguine, Mirabilis jalapa, Nerium indicum*, are commonly cultivated in parks and garden. Some of the plants such as *Mucuna pruriens, Datura metel* and *Calotropis procera* are used in herbal medicine. The use of incorrectly prepared herbal medicine also causes poisoning.

Table 1. Poisonous plants of Hassan district, Karnataka, India

Botanical name	Family	Local name	Habit	Poisonous part	Harmful effects
Abrus precatorius L.	Fabaceae	Gulagangi	Shrub	Seeds	Chewing of seeds is lethal to humans and animals. In humans, it causes vomiting, pain in throat, difficulty in swallowing, severe diarrhoea. In animals; it causes salivation, abortion in pregnant animals.
Agave sisalana Perr	Agavaceae	Boodu kattale	Shrub	Leaves	The sap from leaves produces an irritant contact dermatitis
Ageratum conyzoides L.	Asteraceae	Uralagida	Herb	Whole plant	Contact with the plant results in severe itching in humans. In animals, it causes shivering, very high fever, anorexia, intense diarrhoea.
Argemone mexicana L.	Papavaraceae	Dhatturi	Herb	Seeds	Seeds are narcotic causing headache, nausea, vomiting, and diarrhoea. Mustard oil adulterated with its oil resulted causing deaths of several humans
Asclepias curassavica L.	Asclepiadaceae	Kakatundi	Herb	Whole plant	Intake of milky juice is a severe irritant to livestock, causing inflammation and painful swellings in mouth and alimentary tract.
Balanites aegyptiaca (L.) Delie	Simambaceae	Ingaladamara		Whole plant	The bark juice is considered poisonous.
Buddleja asiatica Lour.	Buddlejaceae	Holilakki	Shrub	Leaves	Consumption of leaves by animals results in salivation
Calotropis procera (Aiton) W.T. Aiton	Asclepiadaceae	Ekka	Shrub	Latex	Humans are affected by the milky latex which is a strong irritant to skin and mucous membrane causing blisters. Leaves as well as latex cause drastic purgation, diarrhoea and abortion in pregnant animals
Cantharanthus pusillus (Murray) G. Don	Apocynaceae	Vishakadagilla soppu	Herb	Leaves	Intake of plant juice is poisonous
Cassia occidentalis L.	Caesalpiniaceae	Yeleuri gida	Herb	Leaves	Accidental consumption of pods by humans causes vomiting, nausea, fever, purgation and ataxia
Cuscuta reflexa Roxb.	Cuscutaceae	Badanike	Herb	Whole plant	It causes vomiting, anorexia, abdominal pain and purgation in livestock
Datura metel L.	Solanaceae	Ummatti	Herb	Whole plant	Accidental intake of seeds or leaves by humans or livestock causes drowsiness, dryness of mouth and throat

Dieffenbachia seguine Schott	Araceae	Vishudgida	Herb	Plant juice	Inflamed mouth, swallowing difficulty, swelling of tongue, inability to talk
Dodonaea viscosa Jacq.	Sapindaceae	Andaragida	Shrub	Leaves	Consumption of leaves by animals causes nausea, vomiting, shivering, ultimately death
Euphorbia nerilifolia L.	Euphorbiaceae	Yelegalli	Shrub	Whole plant	Latex is acrid and injurious to eyes
Gloriosa superba L.	Colchicaceae	Koli kutumana gedde	Herb	Tuber	Consumption of tubers in large doses by livestock causes acute poisoning resulting in foaming in mouth, burning sensation in stomach, bloody diarrhoea, extreme unconsciousness followed by death.
Holoptelea integrifolia Planch.	Ulmaceae	Tapasimara	Tree	Bark	The wood has an offensive smell, the crushed bark is used as fish poison
Ichnocarpus frutescens (L.) R.Br.	Apocynaceae	Karibantana balli	Shrub	Leaves	Ingestion of leaves causes vomiting and gastrointestinal irritation in animals
Ipomoea eriocarpa R. Br.	Convolvulaceae	Mulliballi	Herb	Root, seeds	Intake of root or seeds by animals results in abdominal cramps.
Jatropha curcas L.	Euphorbiaceae	Vishaharalu	Large shrub	Seed	Consumption of seeds by livestock results in salivation, vomiting, acute diarrhoea followed by bloody diarrhoea.
Justicia adhotoda L.	Acanthaceae	Aadumuttada soppu	Under shrub	Leaves	Animals usually do not browse accidental consumption of leaves causes abdominal pain and purgation.
Melia azedarach L.	Meliaceae	Vishabevu	Tree	Fruit, seeds	In humans, it causes nausea, vomiting, and severe colic. In animals, it causes anxiety, trembling of limbs.
Mirabilis jalapa L.	Nyctaginaceae	Vibutihoovu	Herb	Tubers	Tubers are poisonous causing severe irritation in mouth.
Mucuna pruriens (L.) DC	Fabaceae	Nasugunni	Shrub	Fruits	Bristly hairs on pods, when in contact with skin, cause acute itching, inflammation and dermatitis in both humans and animals.
Nerium indicum Mill.	Apocynaceae	Kanagilu	Shrub	Leaves	Leaves are poison to animals producing weakness, abdominal pain, vomiting, bloody diarrhoea, even death
Parthenium hysterophorus L.	Asteraceae	Congress gida	Herb	Whole plant	Contact with the plant results in severe itching in humans
Plumbago zeylanica L.	Plumbaginaceae	Bili chitramula	Herb	Roots	Powdered roots made into a paste with water is given for abortion
Ricinus communis L.	Euphorbiaceae	Haralu	Shrub	Seeds	Accidental consumption of seeds by children causes headache, vomiting, diarrhoea, weakness and finally death.
Solanum virginianum L.	Solanaceae	Kantakari	Herb	Whole plant	Contact with the plant results in severe itching in humans. Berries are toxic to livestock causing vomiting.
Thevetia peruviana Merr	Apocynaceae	Kanagilu	Small tree	Whole plant	Milky juice of all parts of the plant is highly poisonous causing skin irritation and inflammation
Urginea indica (Roxb.) Kunth	Liliaceae	Kadubili irulli	Herb	Tubers	Excessive consumption of bulb is poisonous causing nausea and bloody urine and paralysis
Xanthium indicum Koen. ex Roxb.	Asteraceae	Maralumatti	Herb	Whole plant	Consumption of young leaves causes nausea, vomiting, unconsciousness, convulsions and even death.

CONCLUSION

The poisonous plants may cause serious health problems and sometimes death, the documentation of these plants creates more awareness to the people as to taka care while consuming and used as alternative medicine. Further studies are needed to determine the identity of toxic phytochemical present in the poisonous plants.

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