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Review of ethnomedicinal plant *Helicteres isora* Linn. and its traditional uses in India.

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Abstract:

This paper provides information on the ethnomedicinal and traditional uses of the medicinal plant *Helicteres isora.* Ethnomedicine has been used as a starting point in drug discovery, specifically pharmacological techniques. India has a rich tradition of plant-based knowledge of health care. A large number of plants, plant extracts, decoctions, and pastes are mostly used by tribal peoples for the treatment of various diseases. The uses of different plant parts by the local peoples in different aspects have been studied by several workers. The whole plant of *Helicteres isora* has excellent medicinal properties from ancient times. The parts of a plant that have been widely used in Ayurvedic medicine include roots, leaves, seeds, and fruits. Different types of pharmacological activities found are antidiabetic, anticancer, antioxidant, hypolipidemic, anti-inflammatory, antibacterial, anti-diarrheal, hypolipidemic, hepatoprotective, brain oxidant potency, etc. *Helicteres isora* is a rich source of antioxidants, carbohydrates, proteins, Fiber, phosphorus, calcium, and iron. The plant also exhibits the activity of demulcent and astringent activities. Every part of the medicinal uses of *Helicteres isora* Linn., having the above activities. In this study, we investigated the traditional uses of *Helicteres isora* plants. Ethnomedicinal data were collected by using semi-structured and open-ended questionnaires. Field excursions with expert lecturers and traditional healers were carried out. Descriptive statistics were used to present data.

Introduction:

Ethnomedicine is a study or comparison of traditional medicine based on bioactive compounds in plants and animals. Scientific ethnomedicinal studies constitute either anthropological research or drug discovery. Ethnobotany is the study of relationships that exist between people and plants. According to WHO, any plant which contains substances that can be used for therapeutic purposes, or which are precursors for chemo pharmaceutical semi-synthesis. This definition distinguishes between the already known medicinal plants whose therapeutic properties or characteristics are precursors of certain molecules which have been established scientifically, with that of other plants used in traditional medicine which are regarded as medicinal, but have not yet been subjected to a thorough scientific study. Ancient civilizations have developed many therapies based on plants like Ayurveda, Homeopathy, Siddha, Unani, etc. The plant-based traditional medical systems continue to provide primary healthcare to more than three-quarters of the world's population as per The World Health on traditional medicine.

Helicteres isora or Indian screw tree or Avartani, is a small tree or large shrub found in southern Asia and northern Oceania. It belongs to the family Malvaceae. Avartani means rotating. The fruits of *Helicteres isora* are

twisted. The fruits give an imagination about intestines. Hence, they are useful in treating intestinal parasites. The fruits are twisted; hence they are useful in twitching pain in the abdomen. *Helicteres isora* is used in treating diarrhea, dysentery, abdominal colic pain, intestinal parasites, etc. Its roots, stem, bark, and fruits are used for medicinal purposes. It is used as a folk medicine to treat snake bites, diarrhea, and constipation in newborn babies (Kadus et.al. 2023).

Along with antimicrobial and antioxidant activities, *Helicteres isora* leaf extract also shows wound-healing potential (Mahajan et. al. 2020).

The taxonomical classification of *Helicteres isora* is as follows,

Kingdom: Plantae

Subkingdom: Tracheobionta

Division: Mangnoliophyta

Class: Mangnoliopsida

Subclass: Rosidae

Order: Malvales

Family: Sterculiaceae

Subfamily: Helicteroideae

Genus: Helicteres

Species: isora

Fig. – Dried Pods of Helicteres isora

Helicteres isora is common in evergreen forests and secondary jungles along roads and forests. It is commonly found in central and western India, as far west as Jammu, Sri Lanka. It is also common in hill slopes, Panchkula, Yamunagar. The root juice of this plant has been used in the treatment of diabetes by several ethnic groups in different parts of India. Fruits are employed in intestinal disturbances such as colic, flatulence, and diarrhea (Mankar et. al. 2021).

The height of *Helicteres isora* is five to eight meters. It has grey bark and alternately arranged, hairy, ovate leaves with serrate margins. The flowers of this plant are brick red or orange-red. Its fruits are green when raw, brown or grey when dried and twisted, with a screw at its pointed end. The seeds of *Helicteres isora* are black or brown and are highly polished (Hansan et. al. 2024)

Materials and Methods:

Study area:

The plant material is collected from Nagnath Arts, commerce, and Science College Aundha Nagnath. Aundha Nagnath is a town in the Aundha Nagnath subdivision of Hingoli district. It lies in the Marathwada region of the Indian state of Maharashtra. The town is known for the Aundha Nagnath temple, it is the 8th Jyotirling out of 12 which is dedicated to the lord Shiva. The famous tourist spot along with the temple includes the beautiful garden and the reserved forest region on the outskirts of the town.

Aundha Nagnath town rests on the Deccan Trap in the Marathwada region of Maharashtra. The Aundha Lake situated on the southern side is the major source of water for the town. This region is in the Balaghat range forest which contains a large number of medicinal plants.

Materials collection:

An ethnobotanical survey was conducted at the Magrath Arts, commerce, and science college, Aundha. An ethnobotanical survey was carried out from October 2023 to October 2024. The plant material is collected by direct visit to the field with Dr. Pratap V. Deshmukh, Assistant Professor, Nagnath Arts, commerce and Science College, Aundha. More than one thousand plants of *Helicteres isora* have been very nicely conserved for near about twenty-five years by Dr. Deshmukh and his colleagues in this college.

The data is also collected by personal observation of treated peoples and interviews with traditional healers namely various, medicine men, traditional medicine practitioners, and rural herbal medicine sellers, and compared with available literature (More et. al. 2023). After the interviews, identification of the plant material is done in the laboratory of N.E.S. Science College, Nanded by using available floras. The Herbarium specimen was prepared and photographs were taken. Various parts of the plant like roots, stems, leaves, bark, and fruits were collected and dried in the shade to make it powder.

Fig. – *Helicteres isora* Linn. Plant in the Nagnath Arts, commerce, and Science College campus, Aundha Nagnath.

Fig.- Collection of *Helicteres isora* in the Magrath arts, commerce, and science college campus, and Magrath with Dr. Pratap Deshmukh.

Results and discussion:

Botanical name: *Helicteres isora*

Other names: Sanskrit- Avartani, avartphala,

Hindi- Marorphali, bhendu, jonkphal,

English- Indian screw tree, East Indian screw tree, deer's horn,

Marathi- Kewad, muradsheng,

Gujarati- Maradashingh,

Kannada- Yedmuri,

Bengali- Antamora,

Tamil- Valampuri,

Telugu- Valambiri.

Family and distribution: Family -Malvaceae

Distribution- Tropical and subtropical regions of India

Habit: A large shrub up to 3m

Activities found in plant extract: 1. Anti-hyperglycemic, anti-HIV, Hypolipidaemic, antioxidant, anti-bacterial, anti-plasmid, anti-cancer, anti-nociceptive, hepatoprotective activity.

2. *Helicteres isora* bark extract shows anthelmintic potential against *Pheretima posthuma.*

Plant part used : Roots, bark, leaves, fruit

Important phytoconstuituents: 1. Fruit contains alpha and beta amyrins, friedlin, lupeol, taraxerone, and lactic acid.

2. The seed contains Diosgenin.

3.Roots have cucurbitacin B and Iso- Cucurbitacin B.

3. *Helicteres isora* is a rich source of antioxidants, carbohydrates, proteins, fiber, calcium, phosphorus, and iron.

4. Active phytoconstituents like gallic acid, caffeic acid, and vanillin is also present.

Medicinal uses: 1. Fruit pod extracts are found to be anti-dysentric, vermifuge (colic), astringent.

2. The root decoction and the paste are reported to be traditionally used in ISM against diabetes, diarrhea, stomach afflictions and asthma.

3. The bark extract possesses insulin uptake sensitizing properties, and hypolipidaemic activity.

4. Leaf paste is claimed to be effective against various skin ailments such as eczema, and scabies.

(Bhuvana et. al. 2018)

5. The root juice and bark are said to be used in the treatment of intestinal infections, colic, diarrhea, dysentery, diabetes, asthma, blood disorders, snake bites, and emphysema and as a urinary astringent, exportant, and anti-galactagogue.

6. Fruits were used as an astringent, refrigerant, demulcent, vermifuge, anti-spasmodic, and in constipation (Saravanan et. al. 2023)

7. Excellent cure for gastrointestinal problems

8. Health booster for new mothers

9. The paste of leaves of this plant is applied externally on the skin to get relief from various skin diseases.

10. *Helicteres isora* has a sensitizing activity that stabilizes blood sugar levels in the blood and helps to manage diabetes.

11. Effective for treating respiratory diseases- The chemical constituents present in this plant are very effective in treating respiratory diseases like dryness of the lungs and throat. It is also very beneficial in the treatment of tuberculosis and blood-tinged sputum.

Helicteres isora has several traditional uses, particularly in Ayurvedic and folk medicine. Various parts, including leaves, roots, and flowers are utilized for their potential therapeutic properties.

Digestive health: The plant is often used to alleviate digestive issues, including diarrhea and dysentery, due to its astringent properties.

Anti-inflammatory effects: The plant is believed to have anti-inflammatory effects, making it useful in treating conditions like arthritis and swelling.

Antioxidant activity: The plant contains compounds that may help combat oxidative stress, potentially protecting cells from damage.

Respiratory relief: It is sometimes used to relieve symptoms of respiratory conditions, such as coughs and bronchitis.

Skin health: The extracts may be applied topically to treat skin irritations and infections.

Wound healing: Traditional practices include using the plant for its purported ability to promote healing in wounds and cuts

Diuretic properties: It is also noted for its diuretic effects, aiding in the elimination of toxins through increased urination.

Conclusion:

The collection of information is done based on interviews. Open-ended questions are asked of the local people and expert lecturers in the college. The collected information as well as data is checked by using available literature and compared with many reputed research papers published in the journals.

Helicteres isora is widely used for curing various diseases due to its great therapeutic potential. The herb *Helicteres isora* is used in traditional medicine to treat newborn constipation, diarrhea, and snake bites. Research indicates that extracts of *Helicteres isora* derived from bark, leaves, fruits, and roots possess a range of beneficial properties, including antioxidant, anti-dysenteric, anti-diabetic, and antimicrobial activities. The fruit extract of *Helicteres isora* shows free radical scavenging abilities (Ramya et. al. 2024).

Helicteres isora has pharmacological actions like anti-oxidant, anticancer, antidiabetic, hypolipidemic, antibacterial, anti-inflammatory, hepatoprotective, brain oxidant potency, and anti-diarrheal actions. Bark extract shows anthelmintic activity. It is used in treating diarrhea, dysentery, abdominal colic pain, and intestinal parasites. According to the study, we conclude that *Helicteres isora* Linn's whole plant parts as well as the chemical constituents in every part is effective. The whole plant of *Helicteres isora* is used for medicinal purposes for treating various types of diseases.

These uses highlight its significance in traditional medicine, through scientific research is still needed to fully understand its efficacy and safety.

Future aspects and suggestions:

Further investigations are necessary to find out the active bioactive molecules responsible for curing various types of disorders because various types of phytoconstituents are present in the plant and are used to cure various types of diseases without any side effects or very little amount of side effects. Parts of the plant like roots, stems, leaves, and fruits contain natural bioactive compounds. Medicinal plants are used by many people as an alternative source for allopathic medicines. So, I suggest further work could be done, it will be beneficial in the field of pharmacology.

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