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ETHNOBOTANICAL STUDIES OF *HELICTERES ISORA* – AN IMPORTANT MEDICINAL PLANT

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ABSTRACT

Medicinal plants provide an efficient local aid for disease free life. Due to after-effects of synthetic drugs, people are increasingly becoming inclined towards the traditional medicines. Ethnobotanical explorations play a vital role in bringing to light information about such plant species of our rich flora that can be sources of safer and cheaper potent drugs for the benefit of mankind. In a country like India, according to recent estimates, 70 percent of inhabitants still rely on herbs. Rajasthan, the largest state of the country is rich in floristic as well as ethnic diversity, which makes it the ideal place to work on 'Ethnobotany'. *Helicteres isora* is a very important medicinal plant belonging to family Sterculiaceae commonly known as 'Marorphali'. It is used by various tribes for treatment of many diseases. All parts of the plant are extensively used in indigenous system of medicine. Five recipes based on seeds, six on fruits, one on stem bark, one recipe on root and leaf juice, one recipe on root bark and stem bark are used.

KEYWORDS: Medicinal Plant, Ethnobotany, *Helicteres isora*, Diseases.

INTRODUCTION

Ethnobotany is the study of the relationship between plants and people: From "ethno" – study of people and "botany" –study of plants. Ethnobotany is considered a branch of ethnobiology. Ethnobotany deals with the complex relationships between (uses of) plants and cultures. The focus of ethnobotany is on how plants have been or are used, managed and perceived in human societies and includes plants used for food, medicine, divination, cosmetics, dyeing, textiles, for building, tools, currency, clothing, rituals, social life and music.

Ethnobotany is a multidisciplinary science defined as the interaction between plants and human culture. It is not limited to the use of plants for food, clothing and shelter but also includes their use for religious ceremonies, ornamentation and health care.[1]

Harshberger, defined Ethnobotany as "the study of the utilitarian relationship between human beings and vegetation in their environment, including medicinal uses".[2] Though the term "ethnobotany" was not coined until 1895 by the US botanist John William Harshberger, the history of the field began long before that. In AD 77, the Greek surgeon Dioscoriodes published "De Materia Medica", which was a catalogue of about 600 plants in the Mediterranean. It also included information on how the Greeks used the plants, especially for medicinal purposes. This illustrated herbal contained information on how and when each plant was gathered, whether or not it was poisonous, its actual use and whether or not it was edible (it even provided recipes). Dioscoriodes stressed the economic potential of plants.

Beginning in the 20th century, the field of ethnobotany experienced a shift from the raw compilation of data to a greater methodological and conceptual reorientation. This is also the beginning of academic ethnobotany and founding father of this discipline is Richard Evans Schultes.

In India much literature, relevant to ethnobotany can be traced to the vedic literature, Charak and shusruta and Charak samhita appeared as the most important work. A large portion of this country was covered with forests which yielded a number of medicinal plants. These plants were initiated extensively in ayuredic system of medicine since many centuries.

Very little organised work has been done in the country till about twenty years ago. Organised field work and other studies in the subject were started in the Botanical Survey of India. There has been a resurgence of interest developed in ethnobotanical research in various institutions. Dr. E.K. Janaki Aromal initiated researches on ethnobotany in BSI. She studied food plants of certain tribals of South India. From 1960, Dr. S.K. Jain from BSI started intensive field work among the tribals of Central India. He devised methodology for ethnobotany particularty in the Indian context. The publications from this group in the early sixties triggered the ethnobotanical activity in many other centers, particularly among botanists, anthropologists and medial practioners etc. in India. During the last four decades similar work has been initiated at various centres such as, National Botanical Research

Institute (NBRI) at Lucknow, National Bureau of plant Genetic Resources (NBPGR) at Delhi, Central Council of Research in Unani Medicines (CCRUM), Central Council of Research in Ayurveda and Siddha (CCRAS) and in some other institutions.

Very little work on the ethnobotany and economic utilization of local plant resources has been done in Rajasthan in spite of the favourable conditions. Southern Rajasthan has comparatively rich flora and various tribes with a rich cultural heritage. Long back, King published two papers on the famine foods, of Marwar.[3] Some medicinal plants occurring in Alwar was listed by Vyas and Gupta.[4] Raheja and Sen, enumerated the plant resources in the developmental perspective of Rajasthan.[5] Chopra *et al.,* referred to some medicinal plants of Indian arid zone.[6] Singh and Shetty, surveyed the natural resources of Rajasthan Desert.[7] Paroda, explored plant resources of Indian arid zones for industrial uses.[8]

Singh and Pandey, enumerated fiber yielding plants of Rajasthan.[9] Joshi, gave an account of the ethnobotany of the Bhil tribe of Rajasthan.[10] Billore, described the medicinal plants used by the Bhils of Banswara district and some medicinal plants of Ajmer forest division.[11] Khan, discussed the anticancer plants of Banswara district.[12] Some scientists gave an ethnobotanical profile of the Indian desert plants used in veterinary medicines by the Bhils.[13-14]

Katewa *et al.* conducted a floristic survey of ethnomedicinal plants occurring in the tribal area of Rajasthan.[15] An ethnobotanical survey of tribal area of southern Rajasthan was carried out for ethno-sexicological herbal medicines.[16] Ethnomedical uses of biodiversity from Tadgarh-Raoli wildlife sanctuary of Rajasthan was reported.[17] Ethnobotanical survey of Sariska and Siliserh regions of Alwar District was reported.[18]

Rajasthan is the largest state of India occupying an area of 3,42,274 square kilometers. It covers nearly 11 percent of the area of India lying between $23^{0}3$ and $30^{0}2$ North latitudes and $69^{0}3$ and $78^{0}7$ East longitudes. In shape it is almost rhomboidal. It is surrounded by Pakistan in the West and the States of Punjab, Haryana, Uttar Pradesh, Madhya Pradesh and Gujarat in the north, east and south. The presence of the Great Indian Thar desert portion makes Rajasthan a unique state of India.

The state of Rajasthan is inhabited by several tribes namely, Bhil, Bhil-Meena, Damor, Dhanaka, Garasia, Kathodia, Koli, Mina, Nayaka, Patelia and Sahariya. Besides these, there

are some nomadic, semi-nomadic tribes and denotified communities also. Nomadic tribes are Banjara, Gadia-Lohar and Kalbelia, whereas semi-nomadic tribes are Rebari, Jogi and Manasi. Among denotified communities, Bori, Kanjer, Sansi, Bagri, Jat and Bhat are included. From the population density view, Meena, Bhil, Damor, Garasia and Sahariya are significant.

Helicteres isora is an important medicinal herb belonging to family sterculiaceae. It is commonly known as 'Marorphali'. Natural population of *Helicteres isora* is found on hill slopes in India. In Rajasthan it is found in dense forests of Arawali hills up to a height of 200-400 meters. *Helicteres isora* is a subdeciduous large shrub or small tree, grows up to 5 m in height; bark is grey. Stellate hairs cover young shoots and bark [Fig. 1A]. Flowers are2.5-3.8 cm long, distinctly bilabiate, in axillary clusters of 2-6 together, pedicel very short, stellately tomentose; bract small, subulate, hairy [Fig. 1B]. Fruits are follicles 5, beaked, 5-6.3 cm long, linear, twisted together into the form of screw, stellately tomentose [Fig. 1C]. Seeds are numerous, angular; testa loose, wrinkled. [Fig. 1D].

Ethnobotanical studies of *Helicteres isora* have been carried out by many workers as given in table 1 However, much information on the use of 'Marorphali' as traditional medicines has not been documented from many rural areas of Jaipur and Alwar districts of Rajasthan, India.

Table 1: Contribution of scientists in ethnobotanical studies of *Helicteres isora.*

Plant part	How to use	Use
Root	Juice of root	Diabetes, empyema, snake bite[19]
Fruit	Boiled with mustard oil, filtered and used for massaging legs for two days.	Gout[20]
Fruit and bark	Decoction taken orally.	Diabetes[21]
Fruit	a. Juice of fruit mixed with equal quantity of mustard oil. b. Fruit grounded with *Cynodon dactylon* and mixed with turmeric paste, and used for massaging.	Weakness of children[22]
Seed	With coconut oil.	Ear drops[23]
Fruit	Decoction taken orally.	Dyspepsia[24]
Root	Root base mixed with cow milk is applied on hypogastrium.	For easy delivery[25]
Whole plant parts	Glycosidic extract.	Lowering glucose level[26]
Fruit	Aqueous extract.	Rickets in babies[27]
Fruit	Aqueous extract.	Fits[28]
Fruit	Fruit grinded in cold water, mixed with black pepper.	Urinary complaints[29]
Fruit	Seed pounded with water.	Gripping of bowels[30]

Root	Root decoction mixed with turmeric powder and applied externally.	Cut and wounds[31]
Stem bark	Aqueous extract.	Snake bite[32]
Root	Extract of root	Snake bite[33]
Root and seed	Roots in the form of powder and also as decoction mixed with honey. Seeds are used in the form of powder.	Diabetes[34]

METHODOLOGY

The present study was conducted in selected rural areas of Alwar district (27.04º and 28.04º North Latitude; and 76.35º and 77.13º Km^2 East Longitude) and Jaipur district (26.23º and 27.51º North Latitude; and 74.55º and 76.50º East Longitude). Alwar and Jaipur occupy an area of about 8380 Km^2 and 11,117.8 Km^2 respectively. These districts are well known for huge diurnal and seasonal temperature variations from 2-5ºC in winter to 40-45ºC in summers. The hilly area and dense forests (Sariska Wild Life Sanctuary, Alwar and Jamwa Ramgarh Wild Life Sanctuary, Jaipur) are the two important natural resources abundantly available in this region which are responsible for the development of *Helicteres isora*, having variable medicinal properties. In order to document the traditional uses of *Helicteres isora* survey was carried out in the rural areas of Alwar and Jaipur district. The information on medicinal uses of the plant has been described after gathering information from local people, experienced aged rural folk, traditional herbal medical practitioners and local herbal drug sellers and; by consulting literature. In the rural areas of Alwar and Jaipur district a total of 450 inhabitants were interviewed. Informants were requested to furnish information on (a) disease treated by the plant species (b) symptoms of the disease (c) whether whole plant is used or some part of it (d) ingredients of a compound recipe (e) preparation of medicine (f) mode of administration (g) duration of treatment and (h) food restriction, if any. The plant collected during the survey was identified and deposited in the Herbarium, Department of Botany, University of Rajasthan, Jaipur, India.

RESULTS

Various discussions showed that gender and age class differ in their traditional knowledge with regard to medicinal plants reported. Males above 50 years of age had more traditional knowledge about medicinal plants and their uses than females. This may be attributed to their involvement in trade related activities. In most of the cases the older people were noted as being better informants and the vivid reason for this may be their personal experience of using these plants since old times. It was observed during the survey that local people are still

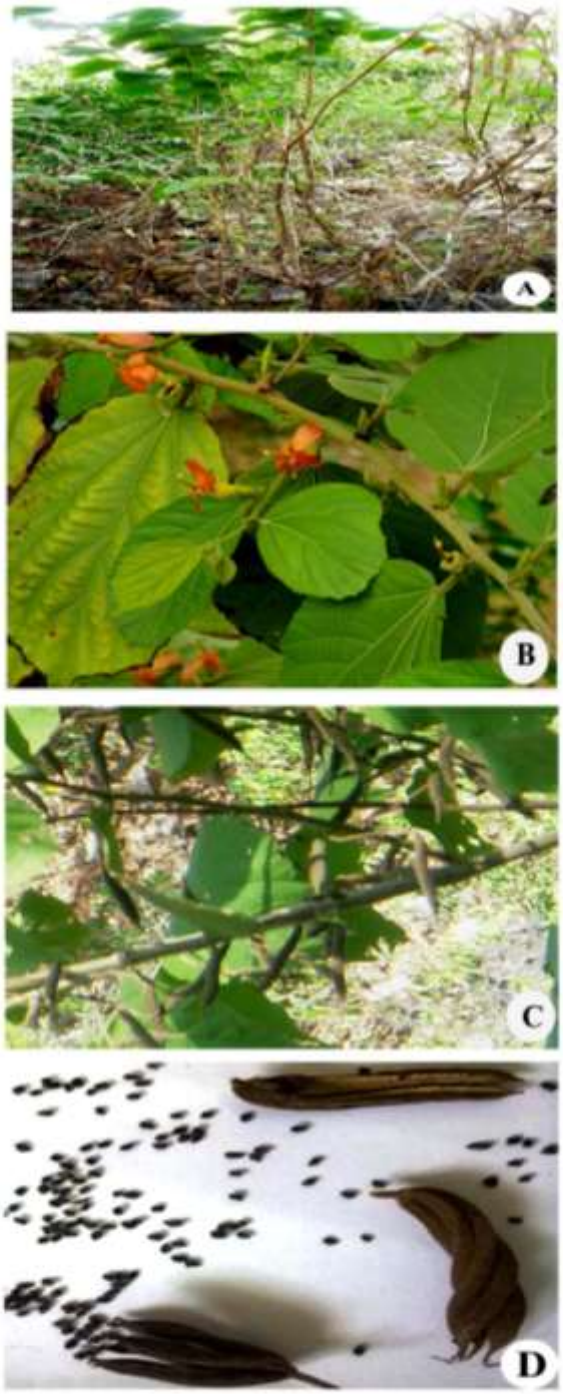
dependent on plant resources for treatment of various ailments, but this kind of dependence is decreasing. This is likely due to multiple reasons. One such reason is lack of belief of the young generation in the traditional medicine systems and increasing use of allopathic medicine due to their availability and efficacy. Another reason likely is the harvest by drug manufactures especially in areas near settlements and pastures, leaving behind very little for access by local communities.

An extensive ethnobotanical survey of the rural areas of Alwar and Jaipur districts provided first hand information on traditional uses of 'Marorphali'. According to survey the plant is used for curing or alleviating different diseases and ill conditions ranging from simple stomach ache to highly complicated diabetes.

The information on the diseases cured by the plant, plant parts used, preparation of medicine, mode of administration, dose and duration of treatment are as follows.

1. **Bed- wetting:** 1-2 tea spoon of dried fruit powder of the plant is boiled in a glassful of sheep's milk for 1-2 minutes and the decoction is given to the little children twice a day up to 12-15 days to cure bed-wetting.
2. **Stomach ache:** Fresh fruit paste of "Marorphali" is mixed with water and taken orally**.**
3. **Dysentery:** Fresh seed aqueous extract of "Marorphali" is taken orally.
4. **Diabetes:** Fresh root bark and stem bark decoction of "Marorphali" is given twice a day.
5. **Griping pain and boils:** Seeds of "Marorphali" are taken with milk orally.
6. **Ear pain:** Seeds of "Marorphali" are grounded with coconut oil and is used as ear drop.
7. **Rickets:** A fine fresh fruit juice of "Marorphali" is mixed with mustard oil and applied on the legs.
8. **Diarrhoea, constipation and spasmodic pain:** Seeds of "Marorphali" are grounded to make fine paste and taken with the water till relief.
9. **Inflammation and skin disease:** Fine fruit powder paste of "Marorphali" applied on the infected body part.
10. **Snake bite:** Paste of stem bark has been applied on the place of snake bite.
11. **Colic and flatulence:** Fresh fruit paste of "Marorphali" is mixed with water and taken orally**.**
12. **Wound healing:** Root and leaf juice of "Marorphali" is mixed with turmeric powder and applied externally on the affected body part.

13. **Indigestion:** Fresh fruit paste of "Marorphali" is mixed with curd or chhach and taken orally**.**
14. **Stomach pain:** 10 gm of seed powder given twice a day for 3 days.



Figs.1 A: *Helicteres isora* growing in its natural habitat
B: Plant of *Helicteres isora* showing flowering stage
C: *Helicteres isora* showing fruiting stage
D: Seeds of *Helicteres isora*

CONCLUSIONS

Helicteres isora is a very important medicinal plant which is used by various tribes for treatment of many diseases. Five recipes based on seeds, six on fruits, one on stem bark, one recipe on root and leaf juice, one recipe on root bark and stem bark are used.

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