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Ethnobotanical Survey of Some Parasitic Plants Growing in Girnar forest of Junagadh District of Gujarat, India

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Abstract

The present study deals with the ethnobotanical survey of some unreported and rare parasitic plants in the vicinity of Girnar forest of Junagadh. The parasitic plants have rarely been reported in this region because of lack of luxuriant growth of other plants. Five parasitic plants were reported from this belt and all these belong to the families of Cuscutaceae, Loranthaceae and Orobanchaceae. Their morphological characters as well as their host were found out. These parasitic plants used as a wedicine. The botanical name, vernacular name, family, parts used in traditional practices by the local people of Girnar forest were narrated.

Keywords: Cuscutaceae, Girnar, parasitic plants, vernacular, Loranthaceae.

Introduction

Junagadh is one of the oldest towns of India and it belongs to Gujarat state. Girnar forest is located at the periphery of Junagadh town and is spread over 181.3 square km area. Girnar forest lies between parallel of latitude $21^{0}25$ " north and meridian of longitude $70^{0}30$ " and $70^{0}40$ " east. In this forest, parasitic plants were rarely found due to abundance of other trees.

Angiospermic parasites of primary habitats are an integral part of an ecosystem. They behave as "prudent predators" and are adapted to life cycle of their principal hosts. Approximately 3900 species of parasitic plants have been recorded by Nickrent¹ amounting to more than 1% of the flowering plants. These parasitic angiosperms belong to 22 families. Parasitic angiosperms have been recognized as an entity for over 2000 years. Almost half of the population of parasitic angiosperms belongs to family Scrophulariaceae. On the basis of extent of autotrophism, parasites can be classified as holoparasites and hemiparasites. On the basis of location of haustorial connection to the host, parasites can be divided into stem and root parasites, further on the basis of the presence or absence of chlorophyll, parasites are separated into achlorophyllous and chlorophyllous parasites.

On the basis of selection of host, parasites are divided into specialist plant parasites and generalist plant parasites. Generalist plant parasites like *Cuscuta* can attack several host species simultaneously as per Pranjali². Interaction between the host and parasite occurs at the haustorium interface. The foreign parasite tissue grows into the host and forms a connection with

the vascular system. Following that connection, competition between the host and parasite for resources begins. Ethnobotany can be very broadly defined as the study of the interactions between plants and people in their local environment according to Arora³. The present work is a part of that which encompasses some important parasitic medicinal plants collected from Girnar forest ranges. Plants that grow on other living plants and absorb food materials from them are called parasites. Some are total parasites and others are partial parasites. Total parasites are non green in colour and they cannot produce their own food. For this purpose they twine around a host plant and absorb as much food as possible. Partial parasites are green in colour and can manufacture little food. They can depend entirely on the host plant. The present paper deals with the indigenous information about the parasitic plants used against the various diseases community of residing in the vicinity of Girnar forest range.

Material and Methods

After a thorough survey of Girnar forest, five parasitic plants were collected. During the investigation, the authors visited and interviewed the elders in tribal community residing in nearby villages of Girnar forest to obtain the information about the use of parasitic plants and plant parts on various diseases and disorders. The specimen vouchers of collected plants were deposited in the Department of Botany, Bahauddin Science College, Junagadh. The collected ethnomedicinal information was thus interpreted in the light of recent researches and presented in the year 2012. Only five parasitic plants were conducted in the year collected and identified with the help of Flora of Gujarat State. Flora of the Presidency of Bombay and Flora of Saurashtra.

Results and Discussion

Although, these parasitic plants have been reported from other parts of Indi but there is no such report of these from Girnar forest region. Thus the present finding is the first report regarding their collection from this region. The morphological features and ethnomedicinal importance of collected plants were discussed individually.

Cuscuta reflexa Roxb. (Vernacular name: Amarvel)

Family: Cuscutaceae. **Habitat**: It is stem parasite found everywhere around Girnar forest of Junagadh. Its common hosts are *Cassia fistula*, *Caesalpinia pulcherima* and *Acacia nilotica*.

Morphological features: Plant is twinner, yellowish green in colour and leafless. Stem is thick, fleshy and twining but hanging pale yellow. Flower is creamy white, glabrous, solitary but short raceme inflorescence. Fruit is capsule, glabrous and globose. Seeds are black and glabrous.

Significance: Decoction of stem is used to cure liver ailments, stomach disorder and urinary tract infections. Whole plant is used in the treatment of head ache, sprain and other joint ailments. The paste of overall plant is applied on swollen testicles and also used in case of hair fall as reported by Ibrar⁴.





Figure-1 Photograph of *Cuscuta reflexa*

Cuscuta chinensis var Ciliaris Engelm (vernacular name: Amarvel)

Family: Cuscutaceae. Habitat: It is also a stem parasite abundantly found in Girnar forest. Its common hosts are *Zizyphus nummularia, Acacia nilotica* and *Cassia fistula*

Morphological features: Plant is twinner and greenish yellow in colour. Stem is thick and fleshy. Flower is large in size, filaments are shorter than anther, infrastaminal seals are broadened upwards, truncate rarely emarginated, fimbriate, style is thick.

Significance: Seeds are used for the treatment of osteoporosis and joints ailments. It works wonder as energiser for liver and kidney disorders. It has high level of flavonoids which provide antioxidant properties. It has positive effect on reproductive health according to Bhogaonkar⁵.



Figure-2 Photograph of *Cuscuta chinensis*



Figure-3 Photograph of *Dendopthoe falcata*

Family: Loranthaceae. **Habitat**: It is a partial parasite growing on trunk of trees. It has been found near the foot region of Girnar forest just adjacent to Bordevi temple of Junagadh. Its common hosts are *Mangifera indica*, *Diospyros melanoxylon* and *Zizyphus jujube*.

Morphological features: Plant is shrub with several twigs and branches. Leaves are simple, alternate, glabrous, coriaceous or obvate in shape, somewhat leathery and oblong. Flowers are creamy white with pink coloured unilateral spike, axillary in position, with minute bracts. Fruit is berry, globose and bright red in colour.

Significance: Bark is commonly used in impotency. The juice is applied in case of leucoderma and other skin infections. The decoction of bark is remedy for asthma and also used to regulate the menstrual cycle in women. Whole plant is employed as an antisyphilitic agent, astringent etc. as repoted by Nadkarni⁶.

Viscum articulatum Burm (Vernacular name: Bodo vando) Family: Loranthaceae. Habitat: It is commonly known as Mistletoe. It is obligate hemiparasitic shrub. It is located at the foothill of Girnar forest particularly near Hasanpur dam of Junagadh. Its common hosts are *Terminalia arjuna*, *Diospyros elanoxylon*, *Zizyphus jujube*.

Morphological features: Plant is dichotomously branched and dark green in colour. Leaflets are jointly flattened. Flowers are greenish yellow.

Significance: Roots are effective in treating leucoderma, constipation, insomnia. Young twigs and leaves are used in the treatment of respiratory ailments. The extracts of leaves are used as stabiliser. Paste of plant is administered in fever, ulcer and blood diseases.



Figure-4 Photograph of Viscum articulatum

Cistanche tubulosa Icon (vernacular name: Oont-bagra or Bhampore)

Family: Orobanchaceae. **Habitat**: It is commonly known as Desert hyacinth. It is located at the top region of forest. Its common hosts are *Salvadora oleoides, Argemone maxicana*. **Morphological features**: Plant is tall and erect, herbaceous and succulent. Stem is white and devoid of chlorophyll.

Leaves are small, simple, alternate, sessile, spirally arranged and non-photosynthetic. Scape is stout, fleshy, furrowed, glabrous or pubescent and densely covered with triangular scales. Flowers are aggregated into spikes. Spike is long, ovoid-long, laterally compressed and beaked. Seeds are many but very small, subglobose.

Significance: Locally the plant is used for treatment of different health problems. It has medicinal properties, especially those related with fertility problems of both the males and females as described by Dharmananda⁷. A decoction of the entire plant is also used against jaundice as per Palevitch⁸. The drug is administered for treatment of whooping cough, stomach aches etc. Either a concoction of the stem is made or the dried stem powdered which is then administered to the patients with sugar as reported by Ilahi⁹. Studies are underway to isolate various active compounds synthesized by the plant and the ethnobotanic importance of the plant. These studies will be helpful

for conservation and sustainable marketing of the drug. It was also observed that the population of parasitic plants was dwindling day by day.



Figure-5 Photograph of *Cistanche tubulosa*

Conclusion

The ethnomedicinal importance of these parasitic plants were found out. The paste of overall plant of Cuscuta reflexa was used in case of swollen testicles . Likewise Cuscuta chinensis worked wonder as energiser for liver and kidney disorders. The importance of Dendopthoe falcata as an antisyphilitic agent and astringent was tested satisfactorily. The paste of Viscum articulatum plant was useful in case of fever, ulcer and blood diseases. Cistanche tubulosa has medicinal properties, especially those related with fertility problems of both the males and females. These plants were explored with respect to the treatment of chronic and incurable diseases.

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