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Threatened and over-exploited medicinal plants of Ahobilam Reserve Forest, Andhra Pradesh, India

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ABSTRACT

People use the plants to cure various disease and disorders from primitive. The excess harvesting of the medicinal plants made them threatened. Therefore, need to document the threatened medicinal plants for making their conservation strategies. Hence, a survey was made to enumerate the threatened medicinal plants of Ahobilam forest areas, Andhra Pradesh, India during 2017-2018. The medicinal values, local name and other information were collected from the local communities. The survey revealed that 22 threatened and over-exploited medicinal plants were collected from the study areas. The most common collected plants are *Gymnema sylvestre*, *Oroxylum indicum*, *Pterocarpus santalinus*, *Saraca indica*, *Pterocarpus marsupium* etc. the present paper highlights the need of conservation of the threatened medicinal plants of Andhra Pradesh.

INTRODUCTION

India has been identified as one of the rich among the mega-diversity countries. It harbors about 49,000 species of flowering plants. India has ranked sixth for largest number of threatened and endangered plant species. The richness of the flora in India is due to the country's wide range of climate, topology and environment. It is well

known for significant geographical diversity which promote the formation of different habitats and vegetation (Binu 1992; Balaji et al. 1995; Bhakshu and Raju 2007). Plant play an important roles in the treatment of diseases and disorders all over the world (Fallah et al. 2006). They are source for a wide variety of bioactive compounds which are

used for the treatment of diseases and disorders (Kopaie & Baradaran 2013). In the present scenario, wild medicinally important plants are declining due to overexploitation, deforestation and entry of exotic species (Constable 1990; Gupta 1995; Schippmann et al. 2006). Literature indicates that between 22 % and 47 % of the world's plant species are endangered due to over exploitation and other factors. We are in grave peril of losing plants wealth and their benefits forever (Gupta et al. 1998; Singh et al. 2006). Keeping the above mentioned burning problems on wild medicinal plants, an attempt has been taken to enumerate the threatened and overexploitation wild medicinal plants of Ahobilam reserve forest, Andhra Pradesh, India.

MATERIALS AND METHODS

A survey was carried out to enumerate the threatened and over-exploited medicinal plants of Ahobilam forest division, Andhra Pradesh during 2017-2018. Ahobilam, one of the famous sacred areas of South. It is situated between 78° 23' to 78° 56' E and 14° 55' to 15° 24' N. It has an average elevation of 327 msl. The average recorded rainfall is about 90 cm. Plant specimens have been collected from all over Ahobilam Reserve forest through several field trips covering all seasons. Herbarium voucher specimens are deposited in Department of Botany at Osmania UG & PG College, Kurnool Aandhra Pradesh, India. The medicinal values were noted from the local people with their vernacular names. Photograph and sample specimens were collected for the preparation of herbarium. The plants were enumerated using flora books (Raju and Pullaih 1997).

RESULTS AND DISCUSSION

The survey results revealed that about 22 plant species belonging 17 families 22 genera noted which comes under threatened and over-exploited

(Table 1, Plate 1). In the present study, it was noted that the maximum number of endangered medicinal plant species belongs to the family Fabaceae. In the Ahobilam Reserve forest, the forest resources have been over exploited in the past to meet the requirement of the pharmaceutical and allied industries. Consequently, many of the important plant species have been threatened and some of them are on the verge of extinction due to unscientific collection by untrained persons. Twenty two endangered plants are identified from the forests which are endangered. *Pterocarpus santalinus* (Plate 1.3) a globally endangered, endemic plant confined to Rayalseema of Andhra Pradesh (Kurnool district). Its stem is smuggled to China and Japan due its Medicinal Properties. *Gloriosa superba* is becoming endangered due to over exploitation for its rhizome. *Pterocarpus marsupium* (Plate 1.7) is harvested for its timber. *Terminalia chebula* the fruits are used in the preparation of Ayurveda Triphala. *Diospyros melanoxylon* is endangered due to overexploitation. Its leaves are used for Beedi for smoking. *Boswellia serrata* is overexploited for its gum resin, which is used in preparation of medicine.

Strategies for Conservation of rare and endangered plants

In-situ conservation: *In-situ* conservation of whole communities allows us to protect indigenous plants. Additionally, *In-situ* conservation increases the amount of diversity that can be conserved and strengthens the link between resource conservation and sustainable use.

Ex-situ conservation: *Ex-situ* conservation is not always sharply separated from *In-situ* conservation, but it is an effective complement to it, especially for those overexploited and endangered medicinal plants with slow growth, low abundance, and high susceptibility to replanting diseases. *Ex-situ*

conservation aims to cultivate and naturalize threatened species to ensure their continued survival and sometimes to produce large quantities of planting material used in the creation of drugs, and it is often an immediate action taken to sustain medicinal plant resources.

CONCLUSION

When some species of plants become extinct, the whole ecosystem of that environment changes or gets disturbed, depending on their importance. In the present study, 22 plants were enumerated which comes under over-exploited categories. Hence, there is an urgent need to conserve them.

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Table1: List of endangered plants of Ahobilam reserve forest

Scientific name	Family	Vernacular name	Status
<i>Holarrhena antidecentica</i>	Apocynaceae	Kutaja	Endangered
<i>Aristolochia indica</i>	Aristolochiaceae	Nalleswari	Endangered
<i>Decalepis hamiltonii</i>	Asclepiadaceae	Nanari	Endangered
<i>Gymnema sylvestre</i>	Asclepiadaceae	Podapatri	Endangered
<i>Hemidesmus indicus</i>	Asclepiadaceae	Sugadapalu	Endangered
<i>Drimia indica</i>	Asparagaceae	Aadivi ulli	Endangered
<i>Artemisia vulgaris</i>	Asteraceae	Machpatri	Endangered
<i>Oroxylum indicum</i>	Bignoniaceae	Dundilam	Endangered
<i>Boswellia serrata</i>	Burseraceae	Sambrani	Endangered
<i>Cochlospermum religiosum</i>	Cochlospermaceae	Konda gogu	Endangered
<i>Terminalia chebula</i>	Combretaceae	Karaka	Endangered
<i>Dillenia indica,</i>	Dilleniaceae	Kalinga	Endangered
<i>Diospyros melanoxylon</i>	Ebenaceae	Beedi akku	Endangered
<i>Pterocarpus santalinus</i>	Fabaceae	Raktha chndanam	Endangered
<i>Butea frondosa</i>	Fabaceae	Moduga	Endangered
<i>Saraka indica</i>	Fabaceae	Asoka	Endangered
<i>Zingiber chrysanthumum</i>	Gingiberaceae	Aggi pulu	Endangered
<i>Gloriosa superba</i>	Liliaceae	Naabi	Endangered
<i>Aegel marmelos</i>	Rutaceae	Maredu	Endangered
<i>Satalum album</i>	Santalaceae	Chndanam	Endangered
<i>Pterocarpus marsupium</i>	Sterculiaceae	Eediga	Endangered
<i>Sterculia urens</i>	Sterculiaceae	Kovili	Endangered



Plate 1: Collected plants, panoramic view of study area and authors in field, 1) *Aristolochia indica*, 2) *Aegle marmelos*, 3) *Pterocarpus santalinus*, 4) *Gloriosa superba*, 5) *Boswellia serrata*, 6) *Decalepis hamiltonii*, 7) *Pterocarpus marsupium*, 8) *Cochlospermum religiosum*, 9) Ahobilam Reserve Forest, 10) Authors in Field