

Ethnobotanical Survey of the Most Threatened Medicinally Important Asclepiads of Indian Thar Desert

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Abstract: An ethno-botanical survey of some threatened & endangered medicinal plants of milkweed family was undertaken by means of oral questionnaire. The aim of present survey is to collect information about these valuable plants of Asclepiadaceae used in the treatments of various ailments and to spot the knowledgeable traditional healers among different communities in rural areas of Bhilwara, Ajmer, Udaipur and Jodhpur districts from Rajasthan, India. Local people were interviewed on the medicinal uses of various parts of these plants. The survey was made during January 2014-January 2015. A total of 08 plant species belonging to 03 genera of the family Asclepiadaceae have been reported to be in use among the rural people of different community of the study area. These species are frequently used for a variety of health problems. Due to overgrazing, encroachments, unsustainable utilization and other developmental activities in the regions, several persistent medicinal plant species are on the verge of extinction. The survey provides a veritable source of information for traditional medical practitioners and medicinal plant researchers and help in developing strategies for future conservation.

Keywords: Ethnomedicinal survey, Asclepiadaceae, Endangered, Exploration, Thar Desert

I. INTRODUCTION

Ethnobotany deals by means of the direct time-honoured and natural association among human beings and plants (Trivedi, 2002). The use of plants as medicine to cure or prevent illness and to lubricate the wheels of social interaction at the interpersonal and group level is a behaviour that predates civilization, and in today's civilization, it is found in every society irrespective of its level of development and sophistication. In spite of the millions of chemical compounds currently synthesized in the laboratory, and available for screening for action of therapeutic value, natural products, particularly of plants origin remain the most important sources of new drugs (Odugbemi, 2006). Medicinal plant is defined as any substance with one or more of its organ containing substances that can be used for therapeutic purposes or which can be used as precursors for the synthesis of antimicrobial drugs (Sofowora, 1982, 1984). It is estimated that there are about 250, 000 – 500, 000

species of plants on earth (Borris, 1996), of which a relatively small percentage (1-10%) of these are used for food by humans and animals. It is possible that more serve medicinal purposes (Moerman, 1996). Medicinal plants contain numerous biologically active compounds such as carbohydrates, proteins, enzymes, fats and oils, minerals, vitamins, alkaloids, quinones, terpenoids, flavonoids, carotenoids, sterols, simple phenolicglycosides, tannins, saponins, polyphenols, to mention a few which have medicinal activities.

India is a home to a great variety of ethnomedicinally important plant species and ranked seventh among 17 mega diversity countries of the world (Anonymous,1993).In Rajasthan State, many ethnobotanical studies on medicinal plant resources have been carried out by Kirtikar and Basu (1984), Joshi (1995), Katewa and Guria (1997), Singh and Pandey (1998), Katewa et al. (2001, 2004), Jain et al. (2004) but the serial documentation of various areas is still lacking. It has been reported that Asclepiadaceae (presently treated as Subfamily *Asclepiadoideae* under the family Apocynaceae, as per the APG III system of classification), is one among the dominant families that includes plants with potential curative values for many health problems (Ganesan *et al.*, 2006; Reddy *et al.*, 2009;Jeeva and Femila, 2012; Lingaraju *et al.*, 2013; Mussarat *et al.* 2014)). Therefore, the objective of this study was to assess the richness of these threatened & endangered medicinal plants of milkweed family and to document the traditional medicinal practices of the different communities dwelling in the rural areas of Thar Desert of India.

II. GEOGRAPHIC DETAILS OF STUDY AREAS

Alwar is a district in Rajasthan; a state in northwestern India, the district covers 8,380 km². It is bound on the north by Rewari district of Haryana, on the east by Bharatpur and Mewat district of Haryana, on the south by Dausa, and on the west by Jaipur districts.

Udaipur District (Rajasthan) is located on the southern part of Rajasthan and is bounded by the Aravalli

Range on the northwest, Rajsamand District on the north, Chittaurgarh District on the east, southeast by Banswara District, Dungarpur District on the south and by Gujarat on the southwest. The district covers 13,883km².

Ajmer (Rajasthan) district has an area of 8,481 km². The western parts, from north-west to south-west, are intersected by the Aravalli Range.

Jodhpur district is bounded on the north by Bikaner District, on the northeast by Nagaur District, on the southeast and south by Ajmer District, on the southwest by Pali District, and on the west and northwest by Jaisalmer district. The district stretches between 26 00' and 27 37' north latitude and between 72 55' and 73 52' east longitude. This district is situated at an altitude between 250 to 300 meters above sea level. It covers 11.60% of total area of arid zone of the state. Some of the area of Great Indian Thar Desert also comes within the district. Despite its arid climate, Jodhpur is blessed with a variety of flora and fauna.

III. METHODOLOGY

Periodic field surveys for ethnobotanical exploration were undertaken during January 2014-January 2015. A total of 61 inhabitants, of which 35 were men and 26 were women were interviewed. Informants were requested to collect specimens of the plants they knew or to show the plant species on site. These informants were traditional healers themselves or had tradition of healing in their families and had knowledge of the medicinal use of the plants. The information was collected by conducting personal interviews with different ethnic groups, villagers and traditional healers. The species mentioned by the informants were taxonomically identified. The ethnobotanical data were collected through questionnaire, interviews and discussions among the traditional practitioners in their local language. Questionnaire allowed descriptive responses, such as part of the plant used, medicinal uses, detailed information about mode of preparation and form of usage either fresh or dried and mixtures of other plants used as ingredients. The information gathered was confirmed by the old traditional practitioners in different groups of village people of the area of investigation. During field survey, the plants have been collected in their flowering and fruiting stages as far as possible from the natural habitats. Collected voucher specimens were pressed, dried, mounted, prepared and

preserved for further reference. Plants with their correct nomenclature were arranged alphabetically by scientific name, vernacular name and ethnomedicinal uses. In this observation important medicinal plants were photographed and the photographs were also affixed in appropriate places in the enumeration of data to support the present study. The plant specimens were identified using relevant Floras (Bhandari, 1978, 1990). The identifications were then verified and confirmed at the Botanical Survey of India, Jodhpur, India.

IV. RESULTS & DISCUSSION

A total of 08 species of almost threatened & endangered medicinal plants (plate1) representing 03 genera were paid more attention (Table 1), that were used for primary health care practices as reported by informants of different communities. These plants have different growth habits which include shrubs and climbers. This study established that many different parts of the medicinal plant species were used as medicine (root, stem, leaves, whole plant, flowers, bark, etc.) but the most commonly used plant part was root & stem (53.02%), followed by whole plant (27.98 %), tubers (12.26%) and leaf (6.74 %). The traditional healers of rural areas using different morphological useful parts such as leaves, root, stem, bark, tuber, and latex for their health care but the stem, root and whole plant extract were largely used for herbal preparations. These collected medicinal plants are used for the treatment of several diseases like ulcer, head ache, diarrhoea, arthritis, cold, fever, bronchitis, elephantiasis, urinary disorders, eye diseases, joint pain, to increase fertility. Head & toothache, digestive problems, wounds, swelling and bone fracture and to serve as antidote for snake bite.

In general, the study focused that there is enormous scope for traditional medicines from species of Asclepiadaceae in the villages of many parts of India as the rural communities collect the curative plant resources in and around their dwelling areas. Thus, the documentation of traditional system of medicines practiced by non tribal communities in other regions of our country is necessary to harness the wealth of medicinally valuable plants and to adopt suitable conservation programme for sustainable utilization. Moreover, scientific validation of many species in terms of characterization of bioactive principles and their efficiency in treating various ailments are yet to be explored.



(A)



(B)



(C)



(D)

Plate 1. A, B:- *Sarcostemma* spp., C, D :- *Ceropegia* spp.

Table1. Important threatened & endangered medicinal Asclepias of Indian Thar Desert

S/N	Local name	Botanical name/Habit	Part used	Medicinal use(s)
1	Aakru	<i>Calotropis gigantea</i> (L.) Shrub	Whole plant, Root powder, Bark latex	Filtered extract- health tonic, anthelmintic, expectorant. Root powder-bronchitis, asthma, leprosy, eczema, elephantiasis. Bark latex- baldness, hair fall, tooth ache and wounds.
2	Aak	<i>Calotropis procera</i> (Aiton) Shrub	Whole plant, Root	Whole plant- eye tonics. Root- treatment of dyspepsia.
3	Chikodi	<i>Ceropegia bulbosa</i> Roxb. Climber	tubers	Tuber decoction-urinary bladder stone Raw tubers- fertility and viability.
4	Berkodi	<i>Ceropegia candelabrum</i> L. Climber	Leaves, Roots	Leaf paste- head ache Powered root decoction-diarrhoea
5	Fuchia	<i>Ceropegia juncea</i> Roxb. Climber	Stem	Crushed stem-ulcers
6	Kokali	<i>Sarcostemma acidum</i> (Roxb.) Shrub	Stem leaf powder Latex Stem and root extract	Stem juice+water-rheumatism, arthritis and joints pain Leaf powder+mustard oil-ear ache Latex+honey-r chronic ulcer Milky latex-lotion. Stem and root extract+ neem bark- Snake bite, dog bite
7	Thegru	<i>Sarcostemma intermedium</i> Dence. Climber	Latex Root paste	Body swelling,snake bite Joint pain, fracture
8	Kantio	<i>Sarcostemma viminalis</i> (L.) Climber	Whole plant extract paste	digestive disorders Joint pain, fracture

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