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Measuring Scales of Climates towards Ethno medicinal Plants among a forest of Banswara District of Rajasthan

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Abstract

Ethnobotanical techniques are steadily increasing in both developing and industrialised countries. Herbal items are also gaining popularity on the national and international markets. No nation can progress unless its national heritage and traditions are made understandable and accessible to everybody. The necessity of the hour is to make the rich biodiversity and associated indigenous knowledge system more understandable and accessible to the masses for their long-term use. The Banswara is noted for its scenic beauty, dense tribal population, and rich culture and tradition built on a complex relationship with nature. Plants and plant products play an essential role in Rajasthan's tribal culture. These plant species are utilised as food plants, agricultural season indicators, and in the treatment of a variety of illnesses. These traditional treatments are used alongside modern medicines in the rural population. In the years 2011-2013, an ethnobotanical research was carried out in Banswara's Ghatol-Peepalkhunt forest area, which has been significantly less investigated from the standpoint of plant folk customs. According to the findings, tribes in this area still prefer to utilise herbs for various diagnostic purposes, either as a complete plant or in various sections such as leaves, stems, bark, and roots, either directly or in various traditional formulations. In the Ghatol-Peepalkhunt area, some 38 plant species from 35 genera and 22 families are used ethno-medicinally by rural people in 12 villages. Traditional knowledge on the ethno-medicinal uses of these plants must be documented in order to conserve plant resources and develop new drugs.

Introduction

Tribes and ethnic groups all around the world have evolved their own culture, clothes, and medicinal traditions, among other things. They use a wide range of wild and cultivated plants to treat a variety of ailments, and as a result, these tribes have access to a wealth of information about medicinal plants. Rajasthan is one of India's major states, located in the northwest. It is

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located between 23o3' and 30o12' longitudes and 69o30' and 78o17' latitudes. The tribal belt in the southern section of Rajasthan, which includes the districts of Banswara, Chittorgarh, Dungarpur, and Udaipur (Fig. 1), is home to the Bhil, Damor, Garasia, Kalbelia, Kathodia, and Meena. The plants that flourish in their environment are an important component of their culture. These people rely on their traditional healing system for most of their healthcare, and information is passed down down the generations through word of mouth. The climate is tropical, with maximum temperatures ranging from 38.3° to 46.0°C in the summer and low temperatures ranging from 7.0° to 11.6°C in the winter (during winter). The average annual rainfall is 65.03 centimetres. Anogeissus latifolia (Roxb. ex DC.) Wall. ex Guill & Perr., Anogeissus pendula Edgew, Balanites aegyptiaca (Linn.) Delile., Boswellia serrata Roxb., Diospyros melanoxylon Roxb., Madhuca indica J.F. Gmelin, Tectona grandis Linn. Several ethnobotanists in India have made significant contributions to the field. These research have been conducted out in Rajasthan from various locations7-15. Studies on the ethnomedicinal plants of southern Rajasthan, on the other hand, are scarce16. As a result, a collection of knowledge regarding plants used by tribals in their traditional healthcare system has been compiled here. The research is based on interviews with local tribals who live in the area and are completely reliant on the plants that grow there.

Literature Review

Azadirachta indica is said to have ethnomedicinal value, according to Nargas and Trivedi (1999). Shekhawat et al. (2006) and Sharma and Kumar (2006), respectively, published works on ethnomedicinal plants from the districts of Jaipur and Rajasthan. Apart from these, Meena et al. (2014) discovered 24 flowering plants used as ethnomedicine in the Pratapgarh District (Rajasthan). Sharma and Kumar (2011) focused ethnobotanical research on Rajasthani medicinal herbs. Mishra et al., (2014) identified 31 plants from 23 families that indigenous people in Rajasthan's Shekhwati region used for various medicinal purposes. Mittal and Batra's latest research describes Tinospora cordifolia as a versatile medicinal herb (2014). Jain and Jain (2012) conducted a thorough review of the literature on Rajasthan ethnobotanical study. They found over 400 different research articles in various journals and publications, among which roughly 89 different pieces that cover a general account of all the tribals' criteria based on wild plants. Similarly, they found roughly 37 distinct study publications that contained useful information regarding the tribe involvement in biodiversity conservation as they conserve their sacred grove and sacred plant species.

On the Bhopas of the state, Kothari (1984a) examined plants employed in magico-religious beliefs and rituals and ceremonies by distinct tribal communities. Sebastian and Bhandari (1984c), Bhils of Udaipur's Magicoreligious Beliefs, Singh and Pandey (1998) identified 83 plant species that are utilised in Rajasthani tribes' religions and magical beliefs. The tribal

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festivities "Gangaur" and "Holi" were discussed by Kothari (1984b, 1985). Palat (1984, 1985) documented the plants utilised in indigenous marriage ceremonies. There are approximately twenty-nine different publications available that cover the Rajasthan tribal people's food plants. The first individual to document the wild plants utilised as famine food and vegetable in the Rajasthan Desert region was the Kingh (1869 and 1870). Sebastian and Bhandari (1990) compiled a list of edible wild plants found in Rajasthan's forest areas, including Mt. Abu in Sirohi, Udaipur, and Banswara. Similarly, ethno-edible plants of Rajasthan have been studied by Joshi and Awasthi (1991), Nag (1999 and 2006), Katewa (2003), and Shekhawat (2010), among others. Kulhari (1992) published his findings on field fencings in Western Rajasthan in the journal Ethnobotany. The communities include Ethnobotany and sixty-nine plant species utilised for fence. Only two publications have been published on ethno-dye-producing plants, such as Sen et al., (2000) reported the dye plant used by Rajasthani tribals, and Jain and Jain, (2012) identified roughly thirty-five articles published in various journals and books that detail the plants species utilised by Rajasthani tribals for their diverse cultural activities. They also looked at fifteen separate articles that described the commercially valuable plant species used by Rajasthani tribes. Only one paper on fibre yielding, two papers on fodder species, and six pieces on toxic and noxious plants used by tribals make up the total amount of publications on plants utilised by Rajasthani tribes.

The musical instruments utilised by the people of the state, especially tribals, have been addressed by Samar (1957, 1979) and Kothari (1964, 1968). Bairathi, a social scientist, has spoken about the importance of 'Mahua', Madhuca indica blossoms in tribal life (1984).

Study Area

Rajasthan is one of India's major states, situated in the northwest corner of the country (Figure 1). It is located between 23o3' and 30o12' longitudes and 69o30' and 78o17' latitudes. The tribal belt of Rajasthan is made up of the districts of Banswara, Chittorgarh, Dungarpur, and Udaipur. Banswara district, in southern Rajasthan, covers 5,037 square kilometres (1,945 square mile) and is located between 23.11° N and 23.56° N latitudes and 73.58° E and 74.49° E longitudes (Figure 2).

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Figure 1: Location map of Rajasthan and district Banswara

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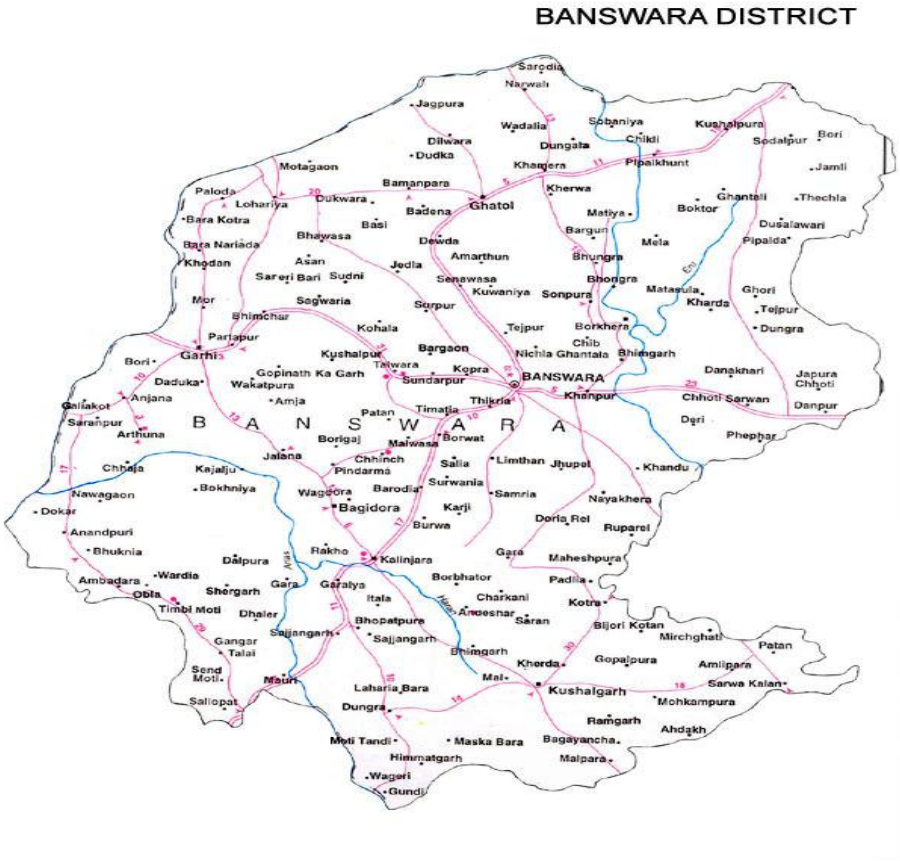

Figure 2: Location map of study site in district Banswara

At the west, the region is characterised by rocky terrain undulated by short ridges. The eastern section of the district is dominated by the Deccan trap's flat-topped hills. The district includes the southern end of the Aravali Mountains, and the Mahi River's drainage system includes the Anas, Chap, Erav, Hiran, and Kagdi rivers. Banswara receives a lot of rain and has a pleasant climate overall. Banswara has a wide range of physiographic features, ranging from plateaus to mountainous areas. It becomes one of the richest spots for the growth of different vegetation, including a range of trees, shrubs, herbs, climbers, and grasses, due to considerable rainfall (averaging around 1000 mm per year) and lots of humidity. The Banswara subtropical evergreen forest has a mixed tree growth with Tectona grandis L. f. nom cons. as the major species, followed by Anogeissus latifolia (Rxb. ex DC.) Wall. Ex Guill & Perr., Diospyros melanoxylon L. Roxb., Madhuca indica J.F. Gmelin, Dendrocalamus strictus (Roxb.) Ne

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Because of the district's unique geographical characteristics, the forest-fringe villages' tribals not only rely on the surrounding medicinal plants for home treatments, but also safeguard them through village sacred groves and ceremonies.

METHODOLOGY

The proposed study was based on personal interviews with various groups in tehsil Ghatol, Bagidora, Kushalgarh, Garhi, Anandpuri, and Aspur (District Banswara and Dungarpur) who could provide accurate information and modes of use, such as village headman, spiritual leader, priest, teachers, and others. In the years 2011–2013, field excursions were conducted at regular intervals to cover the tribal communities in different seasons in order to collect the most information at marriage ceremonies, local fairs at Ghotia Amba, Veneneshwar, and Local HAATS. The data collected through questionnaires in the local language (Baagri) from various localities and villages was compared and cross-linked to ensure their authenticity and integrity. Daily activities were thoroughly observed throughout the study, and interpersonal relationships on various ritualistic celebrations were developed through participation in a variety of social and religious ceremonies. Flora of India [20], Flora of Indian Desert [23], Flora of North East Rajasthan [30], Flora of Upper Gangetic Plain and the Adjacent Siwalic and Sub Himalaya Tract [31] were used to taxonomically identify the collected specimens. The acquired data was verified and authenticated in accordance with established literature [32, 33]. The three sacred groves were surveyed during the course of two years of inquiry. Plants were identified based on their local applications, and a cross-section of tribals were questioned and cross-interviewed for the study's ultimate conclusion.

Rajasthan uses fresh and dried plant materials to treat injuries, wounds, cuts, fever, diarrhoea, ulcers, edoema, bone fractures, potency, antipoisons, skin care, night blindness, toothache, asthma, cough, and cold. Externally, these plants' paste or extract are often used to treat boils, wounds, cuts, swellings, burns, eczema, ringworm, and other skin conditions. In the case of mouth ulcers, sore throats, toothaches, and other ailments, several plants are given orally as a decoction or chewed. Some of the plants used to treat various ailments in different sections of Rajasthan and other states have been claimed to have comparable purposes in the area. The tribals and rural people rely on herbal remedies and have a strong belief in their ancient treatises and customs. Much of the treasure of information is being lost these days as traditional culture fades. As a result, future documentation of herbal medicine's historic procedures will be consistent. There is a pressing need to research and document ethnomedicinal practises' valuable information. The documentation of such data will aid in the development of new medications through subsequent research. The information on ethnomedicinal plants will undoubtedly aid in the development of policies for the protection, cultivation of traditional medicine, and economic well-being of Rajasthan's rural and tribal populations. Phytochemical and pharmacological

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screening for active principles, as well as clinical trials for therapeutic action, are required for the plants and treatments listed below.

DISCUSSION

In this study, 36 plant species employed by rural people in religious rites were documented in the region of Banswara (Rajasthan). Thirty-one species of dicotyledons and five species of monocotyledons were investigated, grouped into 32 genera and utilised by tribals in the past (Table 1). Fast regenerative capacity is required to prevent habitat damage. As a result, there is a pressing need to embrace the ideology of development via conservation, which will lead to development while also conserving resources. Tribals use a variety of plant species in their Traditional Magico-religious practises. Plants have different ways of doing things, but this has no bearing on their conservation efforts. Tribes of Banswara Ninama, Damor, Garasia, Bhagora, and Katara, like all other indigenous tribal cultures, have a deep relationship with nature and have evolved traditional knowledge of environmental protection and biodiversity conservation. Except for therapeutic purposes, several cultural and religious rites and rituals are also undertaken; no plant species is harmed in any manner. Different parts of the plant (roots, stem, leaves, bark, fruits, seeds, bulb, or their extracts or by-products, etc.) or the entire plant (roots, stem, leaves, bark, fruits, seeds, bulb, or their extracts or by-products, etc.) or the whole plant (roots, stem, leaves, bark, fruits, seeds, bulb, or their extracts or by-products, etc.) are used for various cultural, religious rites and rituals

Table 1: List of plant species used in rituals in district Banswara of south Rajasthan

S. No.	Botanical Name	Family	Local Name	Use of Part	Purpose on celebrations
1	Acacia nilotica (L.) Willd	Mimosaceae	Babuliyo	Whole plant	Used in Havan, aahuti etc.
2	*Adansonia digitata* L.	Bombacaceae	Gorakh	Whole plant	Holly plant used in worship
3	*Aegle marmelos* L. Corr.	Rutaceae	Bel	Leaves	Offered to Lord Shiva
4	Annona squamosal L.	Annonaceae	Seetaphal	Leaves and Fruit	Used in Religious ceremonies
5	Annona reticulate L.	Annonaceae	Ramphal	Fruit	Used in

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					Religious and marriage ceremonies
6	Azadirachta indica A. Juss	Meliaceae	Limmro/ Limra	Leaves	Used in Reception
7	Butea monosperma (Lam). Taub	Fabaceaea	Khakhro	Flowers	Used in worship of loard shiva, Holi/Dhulandi festival
8	Calotropis procera (Ait.)Ait. F.	Asclepiadaceae	Aakro	Flowers	Offered to the Lord Shiva and Hanuman
9	Calotropis gigantia (L.)R. Br.	Asclepiadaceae	SafedAakro	Flowers	Offered to the Lord Shiva and Hanuman
10	Cannabis sativa L.	Cannabinaceae	Bhang	Leaves	Offered to Lord Shiva in festivals
11	Catharanthus roseus (L.) G. Don	Apocyaneceae	Sadabahar/Barama si	Flowers	Offered to God and godess Laxmi
12	Citrus aurentifolia (Christm.) Swingle	Rutaceae	Limbu/ Neebu	fruit	Offered in various festivals
13	Cocos nucifera L.	Arecaceae	Nariel	fruit	Used in many religious and social

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					ceremonies
14	Cucurbita maxima Duch. Ex Lam.	Cucurbitaceae	Kolu	fruit	Sacrifice after worship
15	Curcuma longa L.	Zingiberaceae	Pitti	Rhizome	Marriage ceremony
16	Cynodon dactylon(L.) Pers.	Poaceae	Dub	Leaves	Ritual, offered to lord Ganesh or different deties (Pooja)
17	Datura innoxia Mill.	Solanaceaea	Dhaturo	Flower	Offered to the lord Shiva
18	Emblica officinalis Gaertn.	Euphorbiaceae	Amrai	Whole plant	Holly tree is worshiped
19	Ficus benghalensis L.	Moraceae	Vadla	Whole plant	Holly tree, worship of hanuman
20	Ficus religiosa L.	Moraceae	Peeplo	Whole plant	Holly tree and ladies worship on the occasion of Sheetla Saptami
21	Hibiscus rosasinensis L.	Malvaceaea	Jassus	Flower	Offered to goddess Kali
22	Lawsonia inermis L.	Lythraceae	Mehndi	Whole plant	Marriage and religious ceremony
23	Madhuca longifolia (Koen.)	Sapotaceae	Mahudo	Whole	Religious belief

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	Mac Bride			plant	
24	Mangifera indica L.	Anacardiaceae	Ambo/Kerry	Leaves	In marriage ceremony and Festival auspicious, garland hung around gate
25	Musa paradisiaca L.	Musaceae	Kelo	Leaves	Ritual
26	Nelumbo nucifera Gaertn.	Nelumbonaceae	Kamaliyo	Flower	Offered to the lord Shiva
27	Nerium indicum Mill	Apocynaceae	Kaner	Flowers	Used in Festival and Fairs, they wear its flowers at ears.
28	Ocimum basilicum L.	Lamiaceae	Marva	Whole plant	Holly plant to pray loard Saligram (loard Vishnu)
29	Ocimum tenuiflorum L.	Lamiaceae	Tulsi	Whole plant	Holly plant, used in fast worship of the lord Vishnu
30	Pandanus fascicularis Lam	Pandanaceaea	Kevdo	Leaves	Ladies worship, holly plant
31	Prosopis cineraria *(L.) Druce*	Fabaceaea	Khejdo	Stem	Used in Havan, aahuti etc.

Plants or plant parts used in specific cultural and religious rites and rituals have been reported to have medicinal benefits, and tribals try to live close to these plants for better health and spiritual growth. Such plants have already been mentioned as being used in ethnomedicine [40, 41]. Our main concerns are medicinal plant conservation and preservation from overexploitation by domestic and foreign commercial interests with little benefit to the country [42]. Plants like these

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are used in a variety of cultural and religious rites and rituals as a way of conserving the earth's natural resources. Botanical gardens, germplasm banks, and other ways are being used to conserve in situ [43-46]. The goal of this remark is to draw attention to auspicious omen plants.

Conclusion

Various religious beliefs and stories are credited with helping to preserve the region's biodiversity. In the shape of an in-situ conservation technique, Banswara tribal groups have a cultural ecological heritage that must be maintained and respected. The main reasons for their appearance in agricultural fields include grazing, fragmentation of grove-owning families, and weakening of cultural and religious values and taboos. As a result, not only must rare, endangered, and therapeutic plants be protected, but also traditional practises of nature conservation and environmental management must be revived and reinvented.

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