

Ethanaomedicinal Potential of Indigenous Plants of the Rajasthan State to Cure Respiratory Disease

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ABSTRACT

Rajasthan is the largest state in northwestern India. Geographically, it lies between 23°3' and 30°12'N latitude and 69°30' and 78°17'E longitude and is rich in medicinal plant diversity. Numerous sources document the medicinal value of various plants, dating back to the Vedic period. Extensive research has been conducted on ethnomedicinal plants used by various tribal communities and researchers in Rajasthan for the treatment of diseases. This study highlights important medicinal plants of Rajasthan and their therapeutic use in treating respiratory diseases. Due to their constant association with the forest environment, tribal communities have accumulated considerable knowledge of plants and their uses, especially for medicinal purposes. Indigenous crops have the potential to offer long-term food security as they are more resistant to climate change. Herbal medicine is a preferred treatment for various chronic diseases worldwide due to its fewer side effects. Continuously the demand for herbal medicine in the market is increasing. However, the uses of many medicinal plants employed by tribal communities remain unknown outside their communities. Gathering information on the medicinal plants of the state is essential for initiating their proper scientific management and sustainable exploitation for the economic development of the region.

KEYWORDS: Indigenous plants, Medicinal, Native, Rajasthan, Respiratory disease, Tribal

I. INTRODUCTION

Respiratory system is one of the vital systems of the body and is negatively affected by air pollutants, as well as viral and bacterial infections. These infections can lead to several chronic diseases.¹ Modern medicines can help treat these diseases, but they often have side effects that may lead to additional health-related issues. In India, many people still continue to use herbal remedies as first aid for treating mild infections.²

Tribal communities and ethnic groups around the world have their own distinct cultures, beliefs, taboos, totems, religious rites, medicinal practices, traditional diets, agricultural practices, and more. A large number of wild and cultivated plants are used by these tribal groups to treat various ailments, resulting in a considerable body of knowledge on medicinal plants within these communities.^{3,4}

Rajasthan is one of the largest states located in northwestern India. Rajasthan comprises a large population of tribal communities belonging to various ethnic groups.^{5,6} Tribal groups such as the Bhil, Damor, Garasia, Kalbelia, Kathodia, and Meena reside in this region.^{7,8} These communities largely depend on their traditional healing systems for healthcare, and this knowledge is passed down orally from generation to generation without any written documentation.^{9,10,11} An attempt has been made to gather information on plants used by these ethnic societies in their traditional healthcare systems to treat various respiratory ailments. They have accumulated extensive knowledge of herbal treatments and the sustainable use of plant species available in their native lands.

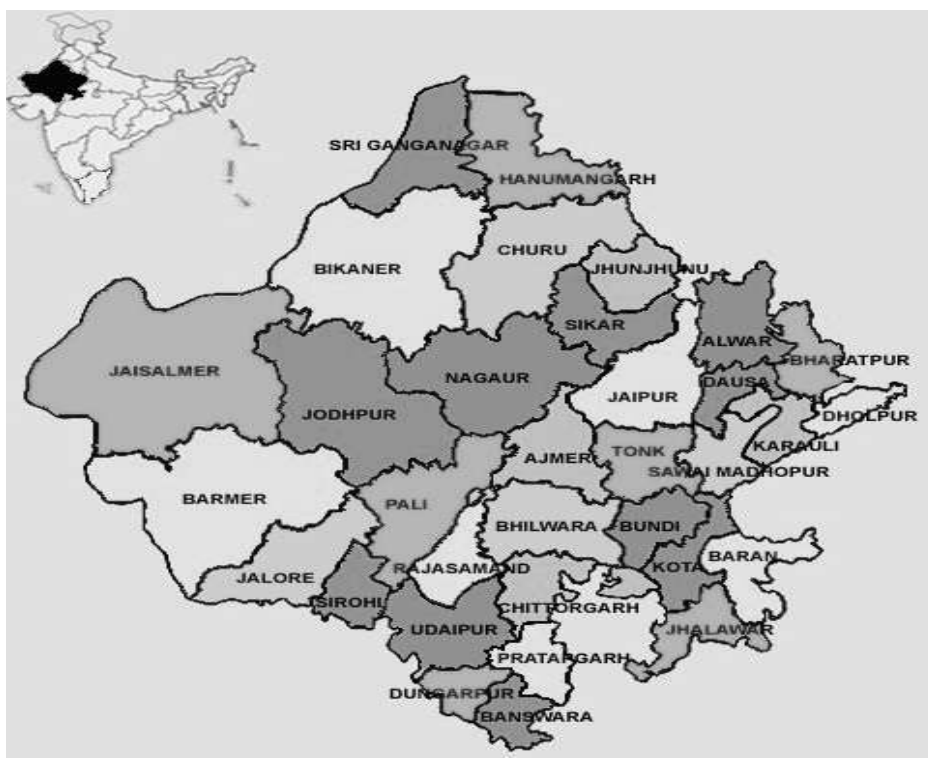


FIG 1: Rajasthan district map

II. AIM AND OBJECTIVE

- The present study aims to create an index of widely used medicinal plants in the state of Rajasthan, which will aid in the treatment of respiratory disorders.
- This study will also assist chemists and pharmacologists in conducting research on these medicinal plants to explore their potential for commercial exploitation.
- The goal of current inquiry is to increase public awareness of the ethnomedicinal significance of indigenous plants and to support new drug development.

III. METHODS

For the present review, various published articles reporting the ethnomedicinal or ethnobotanical utilization of plant species in different states and regions of India were considered. For data collection, various online platforms such as Science Direct, Scopus, PubMed, Research Gate, and Academia were searched. Instead of focusing solely on publications about

respiratory diseases, data was collected from ethnomedicinal folklore studies across different states and regions of India to address various human ailments. This paper provides information not only on the botanical name of the plants from the research articles but their names were updated using “The plant list” database. The table also listed different local or vernacular names of plants in different regions of the country. In addition, the table also depicts their family, part used for herbal preparation, method of use, and source. A literature search was performed using the following key terms: India/ Indian medicinal plants/ ethnobotanical/ ethnomedicinal/ ethnopharmaceutical study for medicinal plants, Traditional medicinal herbs/ plants, Indigenous plants, Plants/ Herbal/ Medicine/ Remedies, Folk Medicine/Folk remedies, names of states of India. Data from review articles, historical documents, experimental studies, or non-open access articles were excluded.

TABLE 1: INDIGENEOUS PLANTS USED FOR THE TREATMENT OF VARIOUS RESPIRATORY DISEASES IN DIFFERENT REGIONS OF RAJASTHAN

S: NO.	BOTANICAL NAME	LOCAL NAME	FAMILY	PART USED	METHOD OF USE	REFERNCES
1.	<i>Abrus precatorius</i> L.	Ratti, Chirmi	Fabaceae	Leaves	Fresh leaves are used to cure bronchitis and cough.	1,12,16
2.	<i>Abutilon indicum</i> (L.)	Kanghi	Malvaceae	Flower	Powdered flowers are used in cough	3,5,17
3.	<i>Acacia catechu</i>	Khair, Kattha, Black cutch	Mimosaceae	Bark, heartwood extract	Heartwood extract and bark paste are administered locally for cough, bronchitis,	5,9,13
4.	<i>Acacia nilotica</i> (L.) Willd ex. Del.	Babool	Fabaceae	Leaves Bark	The decoction of leaves and bark is used to cure sore throat and asthma.	4,5,12
5.	<i>Achyranthes aspera</i> L.	Unga	Amaranthaceae	Whole plant Leaves	The decoction is used to cure cough and cold. Leaves are used to treat asthma	3,5,10
6.	<i>Allium sativum</i> L.	Losson	Amaryllidaceae	Bulb	The bulb is used to cure cold and cough.	5,7,14
7.	<i>Bacopa monnieri</i> (L.)	Brahmi	Scrophulariaceae	Whole Plant	All parts are used to manage asthma.	11,13
8.	<i>Balanites aegyptiaca</i> (L.) Del.	Hingot	Balanitaceae	Fruit	Pulp of Fruit is useful for cough	15,17
9.	<i>Butea monosperma</i>	Dhauk, Palas, Khakara, Flame of the Forest	Fabaceae	Seed	Seed paste is taken orally along with fresh cow milk early in the morning for 20 days to cure asthma	15,18,19
10.	<i>Calotropis gigantea</i>	Aakdo, Madar/ Sefed Aak	Asclepiadaceae	Flowers, Leaves, Root	The leaf-ash is used as a cold and cough remedy.	3,10
11.	<i>Capparis decidua</i> (Forssk.) Edgew.	Kair	Capparaceae	Fruit	Dried powdered fruits are given for cough.	9,13
12.	<i>Curcuma longa</i>	Haldi	Zingiberaceae	Rhizome	Powder taken with honey gives	3,15

					comfort from congestion of bronchi, phlegm & throat infection.	
13.	Datura stramonium	Datura, Thorn apple, Jimsonweed	Solanaceae	Leaves, Fruit, seed	The smoke from burning leaves is used to treat asthma and bronchitis. D. stramonium was used as hallucinogenic drug. It is also used to relax the smooth muscles of the bronchial tube and asthmatic bronchial spasm.	3,5,20
14.	Echinops echinatus Roxb.	Gokhru	Asteraceae	Root	Root extract is used to treat colds and coughs.	3,5,16
15.	Emblica Officinalis	Amla, Indian gooseberry	Phyllanthaceae	Fruit, seed	Powdered seed are given to asthmatic and bronchitis patients. Fruit roasted in wood fire or hot ash eaten for cough cure. A dried fruit with honey is taken in cold and cough.	3,11
16.	Euphorbia hirta L.	Dudhi	Euphorbiaceae	Leaves	Decoction of leaves is used for cough and asthma.	16,17
17.	Glycyrrhiza glabra	Licorice, Mulethi, Sweet wood	Fabaceae	Roots & Rhizomes	It is used in the form of powder, tea, tonic, extract. Drinking this tea might be helpful for asthma, reduce irritation in the throat area, as well as promote the elimination of phlegm.	3,5,13

18.	Justicia adhatoda L.	Adusa	Acanthaceae	Herb	Leaves extract mixed with ginger or honey and taken orally for cough and asthma.	1,3,17
19.	Nyctanthes arbor-tristis.	Harsingar, Parijat	Oleaceae	Flower & Leaves	A tea made from Parijat leaves and flowers is used to reduce cough, cold, and bronchitis & asthma.	16,18
20.	Ocimum tenuiflorum	Tulsi, Holy Basil	Lamiaceae	Leaf, Whole plant	Decoction of whole plant is used to treat cough and pneumonia	6,19
21.	Ocimum basilicum L	Marwa	Lamiaceae	Leaves	Leaves extract mixed with honey and taken orally to cure cough and cold.	5,15
22.	Psidium guajava L.	Amrood	Myrtaceae	Fruit	Roasted ripe fruit is used to cure cough and cold.	18,19
23.	Pithecellobium dulce	Jungle Jalebi, Kikar, hill tamarind, Vilayati imli	Fabaceae	Bark, leaves, Seeds, Flower, Fruit	The white fleshy fruit & the leaf extract of plant is widely used for treatment of tuberculosis.	13,14
24.	Tinospora Cordifolia	Giloy, Amrit bel, Guduchi, Heart-leaved moonseed	Menispermaceae	Root, Leaves & Stem	It can be consumed in the form kadha, herbal tea & powder for asthma & for inflammation in trachea.	13,14
25.	Trachyspermum ammi Sprague	Ajwain, Ajowan, Thymol	Apiaceae	Whole plant	Whole plant extract is used to cure cough,	1,17

		seeds			asthma, bronchitis and cold.	
26.	<i>Trianthema portulacastrum</i> L	Santha/ black pigweed	Aizoaceae	Root	Decoction of the root is taken internally to treat asthma	18,19
27.	<i>Tamarindus indica</i> L.	Imli	Fabaceae	Leaves	Decoction of the leaves is used for throat infections.	1,5,19
28.	<i>Withania somnifera</i>	Aswagandha	Solanaceae	Flower, Root, Leaf	The leaves are chewed to cure cough. Paste of roots is also effective against cough.	13,15
29.	<i>Zingiber officinale</i> L	Adrak	Zingiberaceae	Rhizome	Juice of rhizome is mixed with honey and given orally for dry cough	1,17
30	<i>Ziziphus nummularia</i> (Burn. F.) Wight & Arn	Wild jujube/ Jhar-beri	Rhamnaceae	Leaves	Dried leaves are used for cough and cold.	5,18

IV. RESULT

In this study, data on ethnomedicinal plants, including their local names, plant parts used, and medicinal applications for the effective treatment of respiratory diseases, were collected, analyzed, and presented in Table 1. This study established that various parts of medicinal plant species are used as medicine, including roots, rhizomes, stems, leaves, whole plants, flowers, fruits, seeds, bark, pods, gum, and latex. This study also indicates that the tribal communities of the state utilize a variety of medicinal plants to treat various diseases, such as cough, cold, asthma, bronchitis, tuberculosis, and other respiratory disorders.

V. CONCLUSION AND FUTURE OUTCOMES

Medicinal plants are used for health care from ancient time. Phyto-constituents isolated from plants are used directly as drug or base material for drug synthesis since long time. Huge numbers of plants are unexplored or underestimated for their medicinal utility. Modern synthetic medicine causing various side effects, leads to different health problems. There is immense need of research in scientific way to explore medicinal

utility of different plants. Need to discover natural resources to combat upcoming lethal diseases and increasing problem of drug resistance. In this study we have discussed common plants of Rajasthan. A wide range of phyto-chemicals have been reported in these plants. Pure phyto compounds isolated from these plants should be validated scientifically for their therapeutic .Documentation of the indigenous information about the medicinal plants is valuable for the communities and their future generations. There is enormous scope for future research and further pharmacological investigation of not only these plants but also of other plants to serve the humanity. Ethnobotanical studies have a main role to play in new drug development. The result of this study can be helpful for the drug industry to study on the components of these herbs and investigate further to find a component with higher efficacy. Further, well-designed clinical trials are still needed to focus on safe and cost-effective herbal products.

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