Medicinal Plant-Based Livelihoods and Sustainable Development in the Shekhawati Region, Rajasthan

Dr. Mukesh Kumar Sharma, Dr. Babita

Abstract-The Shekhawati region of Rajasthan, facing arid climatic challenges, historically relied on local flora for medicinal and livelihood purposes. This research investigates the socio-economic role of medicinal plants in the region during 2016, their sustainable conservation, and their potential in fostering rural development. Using ethnobotanical surveys, secondary data, and case studies, the study explores patterns of traditional knowledge, income generation, and threats to biodiversity. The analysis highlights the interplay of local governance, women's participation, and policy constraints, arguing for integrated sustainable models that combine economic upliftment with conservation. Recommendations include strengthening local value chains, legal support, and capacity-building initiatives.

Keywords: Shekhawati, medicinal plants, livelihoods, sustainable development, biodiversity, Rajasthan, traditional knowledge, rural economy, conservation, ethnobotany

I. INTRODUCTION

The Shekhawati region in Rajasthan is renowned for its unique cultural heritage and semi-arid landscapes. Home to diverse flora, the area's communities have historically maintained a symbiotic relationship with local medicinal plants for health and livelihood. With increasing environmental pressures and economic transitions prior to 2016, there is a need to assess how medicinal plant-based livelihoods can contribute to sustainable rural development.

II. OBJECTIVES

1. Map the distribution and diversity of medicinal plants in Shekhawati
2. Analyze the socio-economic significance of medicinal plants for local communities
3. Examine traditional conservation practices and emerging threats
4. Suggest policies for sustainable development based on empirical and secondary data

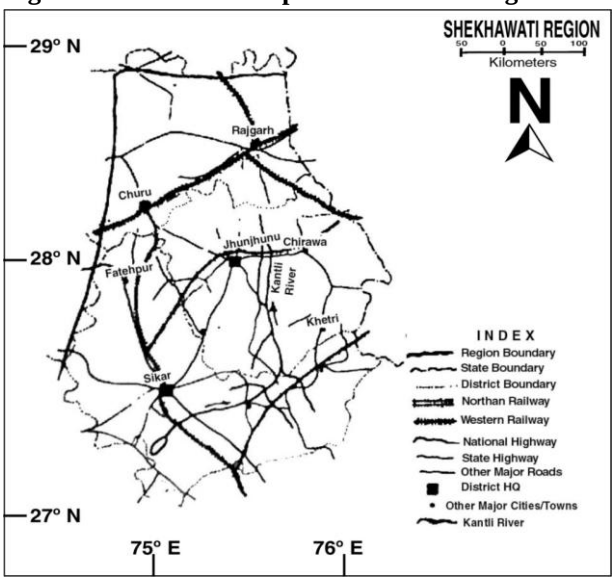
III. METHODOLOGY

This research synthesizes field surveys (conducted up to 2016), ethnobotanical interviews, focus group discussions with rural women and healers, and secondary literature analysis. The study covers various blocks in Jhunjhunu, Sikar, and Churu districts, triangulating traditional knowledge with economic data, resource mapping, and institutional policy review.

IV. STUDY AREA

Figure-1.1 shows the area under study i.e. Shekhawati region which is located in the north-eastern part of Rajasthan state and the region has geographical extension from 26°26' to 29°20' N latitude and 74° 44' to 76°34' E longitude on the map of Rajasthan.

Figure- 1.1 Location Map of Shekhawati Region



The area under study covers fully or partly three districts, namely Churu, Jhujhunun and Sikar. Churu district's out of 7, only 3 tehsils fall under Shekhawati region (Churu, Rajgarh and Taranagar) whereas Jhunjhunu district as a whole with its six tehsils (Buhana, Chirawa, Khetri, Jhunjhunu, Nawalgarh and Udaipurwati) in which Buhana tehsil emerged out as a new tehsil on the map of Jhunjhunu district (2001), it was no more existence in the year of 1991 and Sikar district also covered fully with it's six tehsils (Data Ramgarh, Fatehpur, Laxmangarh, Neem ka Thana, Sikar and Shri Madhopur). The region has 23 Panchayat Samitis in all. Thus, the region under study has 15 tehsils in total with it's total 15343 sq. km. geographical area which makes 5.6% of the state's total. At the part of district-wise contribution by

area point of view in Shekhawati region it is observed that part and portion of Churu district contributes 29%, Jhunjhunu district contributes 31% and Sikar by 40%, respectively.

Among these tehsils area point of view, the tehsil of Churu is largest one and Buhana smallest, respectively. District-wise area point of view Sikar stands at first position which is followed by Jhunjhunu and lowest contribution is made by Churu i.e. 1683 sq. km. only.

At the part of population, Shekhawati region contributes 8.7 percent of the state's total in which sex-ratio is 948 females per thousand males in Total Population whereas it is very low i.e. 887 in Child Population for the area under study. The region obtains high Literacy rate which is about 10% more than that of the state's average. Among tehsils, Buhana ranks at first position while as Neem ka Thana contributes lowest in this aspect. The region obtains high density (244) i.e. 50 percent more than that of state's average which is 165 persons per sq. area 2001. The region has also Slum population but it is very low or to say negligible i.e. 2.5% only of the urban area's total.

The whole region has distribution of two types of soils; Sandy soil and Red Loamy soil. The former soil type has obvious distribution in Churu district, the areas of sand dunes topography; the later soil group is mostly distributed over the districts of Jhunjhunu and Sikar (classification based on dominancy, availability and agricultural productivity). The distribution of soil type and it's physical as well as chemical nature is a significant aspect from vegetation as well as plant species distribution point of view.

On the basis of another type of soil type classification according Prof. Thorpe and Smith based on the origin of the soil, the observations revealed in this direction that Remosols type of soil has distribution in the areas of sand dunes topography; all three tehsils of Churu districts have, Red sandy soil which is more alkaline in nature. Hilly topography soil and Riverine soil have their distribution according the distribution of habitat of study area.

V. MEDICINAL PLANT DIVERSITY AND ETHNOBOTANICAL KNOWLEDGE

1. Diversity and Documentation

Research prior to 2016 documented over 70 species of medicinal value native to the region. Traditional knowledge systems, predominantly orally transmitted, catalog detailed therapeutic uses, harvesting techniques, and preservation methods.

2. Plant Species and Uses

2.1. Withania somnifera: Used for stress relief and immune support

2.2. Aloe vera: Employed for skin treatments and digestive issues

2.3. Calotropis procera: Used in wound healing and antipyretic remedies

2.4. Solanum surattense: Cough and asthma treatments

Local folk healers (Vaidyas) and women's self-help groups play a vital role in maintaining and disseminating this knowledge.

3. Transmission and Gender Dimension

Women, as primary collectors and processors, are custodians of family health as well as micro-entrepreneurs in the herbal trade, reflecting a strong gendered dimension to medicinal plant-based livelihoods.

Aspect	Details
Primary collectors	Smallholder farmers, women, landless laborers
Income share	Up to 15% of total household earnings in collector families
Value-added products	Herbal teas, balms, juices, soaps
Market linkages	Local Mandis, periodic fairs, informal networks

VI. SOCIO-ECONOMIC IMPORTANCE

1. Livelihood Contributions

Medicinal plant collection and processing supplement household income, especially for marginalized groups during the lean agricultural season. Income streams include raw material sales, value-added products (ointments, teas), and the supply of herbs to local markets and traditional practitioners.

2. Value Chain and Market Access

The value chain is often informal, with limited access to organized markets, quality certification, and processing facilities. Middlemen capture a significant share of profits, reducing direct benefits for collectors. Export potential remains low due to lack of standardization and policy support.

3. Case Study: Women's Herbal Cooperatives

In Alsisar block, women's cooperatives have achieved limited success in collective bargaining, micro-processing and marketing of Aloe vera and Ashwagandha products, demonstrating the region's potential for scalable, inclusive business models.

VII. CHALLENGES TO CONSERVATION AND SUSTAINABLE USE

1. Overexploitation and Habitat Loss

Unsustainable harvesting, grazing pressure, and land conversion threaten the habitat and regeneration of key medicinal species. Slow-growing or highly prized plants like Withania somnifera face particular risk.

2. Decline in Traditional Knowledge

Modernization, declining interest among youth, and lack of formal recognition undermine the intergenerational transmission of traditional ethnobotanical knowledge.

3. Institutional and Policy Constraints

Ambiguity in tenure rights, lack of institutional support for community forest management, and restrictive legal frameworks impede community-led conservation and sustainable trading.

VIII. SUSTAINABLE DEVELOPMENT POTENTIAL

1. Policy Frameworks

The Government of India's 2002 National Medicinal Plants Board (NMPB) policy and Rajasthan's State Medicinal Plants Board (SMPB) promote medicinal plant cultivation and conservation, but slow implementation limits their impact.

2. Community-Based Conservation

Joint Forest Management and community herbarium initiatives, where implemented, help restore degraded habitats while providing alternative livelihoods. These models show promise but require scaling and sustained engagement.

3. Livelihood Diversification

Integration of medicinal plant-based enterprises with eco-tourism, agroforestry, and rural health delivery can enhance incomes while incentivizing conservation.

IX. RECOMMENDATIONS

1. Strengthen Local Value Chains: Develop processing facilities, quality assurance, and branding for Shekhawati herbal products, ensuring greater value retention at the producer level.

2. Participatory Governance: Recognize and formalize local stewardship over common property resources.

3. Capacity Building: Enhance training for collectors, especially women, on sustainable harvesting and value addition.

4. Policy Support and Research: Streamline legal frameworks to enable fair trade, protect indigenous knowledge, and stimulate scientific research collaborations.

5. Youth Engagement: Integrate medicinal plant knowledge into educational curricula and rural entrepreneurship programs.

X. CONCLUSION

Medicinal plants offer a viable pathway for sustainable livelihoods in the Shekhawati region, combining traditional knowledge with biodiversity conservation. To maximize their socio-economic and ecological benefits, policy reforms, institutional support, and community participation are essential. The future prosperity of rural Rajasthan depends on integrating these resources into a broader sustainable development agenda.

REFERENCES

[1.] Meena, B.L. (2011). Ethnobotanical studies of medicinal plants in Shekhawati region of Rajasthan. Ethnobotany Leaflets, 15, 151-165.

[2.] Bhandari, M.M. (1990). Flora of the Indian Desert. MPS Repros, Jodhpur.

[3.] Charan, A.K. (1992) Plant Geography, Rawat Publication, Jaipur

[4.] Singh, V., & Pandey, R.P. (1980). Ethnobotany of Rajasthan, India. Journal of Economic and Taxonomic Botany, 1–15.

[5.] Government of Rajasthan, State Medicinal Plants Board reports (2005–2015).

[6.] Kumar, S., & Sharma, S. (2015). Medicinal plants—potential for economic development and biodiversity conservation. Indian Journal of Traditional Knowledge, 14(3), 448-456.

[7.] National Medicinal Plants Board (2002). Annual Report, Ministry of Health & Family Welfare, Govt. of India.

[8.] Rawat, G.S. (2005). Conservation status of medicinal plants in India. Indian Journal of Plant Genetic Resources, 18(1), 79–89.

[9.] Sharma, M.K. (2007). Medical Plant Geography, Rachna Publication, Jaipur.

Dr. Mukesh Kumar Sharma, Principal, Maharani Girls PG College, Rampura, Alsisar, Jhunjhunu.

Dr. Mukesh Kumar Sharma (Bhatt), Bhatt Pansari was born in 1977 in a modest family in the town of Khetri, Jhunjhunu District (Rajasthan) India. Dr. Sharma completed his early education at the Government Jai Singh Higher Secondary School in the same town. He obtained his undergraduate degree in Science from Maharaja College, University of Rajasthan, Jaipur in 1998. Dr. Sharma obtained his Master's degree and Ph.D. in Geography from the University of Rajasthan, Jaipur in 2000 and 2006, respectively.

Dr. Sharma has authored over Several research papers and books to date. He has presented research papers at national and international conferences Several research scholars have completed their research under his supervision. He is engaged in teaching and research in the fields of Ayurveda, Environmental Geography, Applied Geography, Bio-Geography, Phyto-Geography, Medical Geography and Integrated Area Development. Dr. Sharma holds the membership of various International, National and Regional Academic Societies contributing in most valuable manner.

Dr. Babita, Assistant Professor, Department of Geography, Maharani Girls PG College, Rampura, Alsisar, Jhunjhunu