

International Journal of Foreign Trade and International Business



E-ISSN: 2663-3159
P-ISSN: 2663-3140
Impact Factor: RJIF 5.22
www.foreigntradejournal.com
IJFTIB 2025; 7(2): 143-146
Received: 12-09-2025
Accepted: 10-10-2025

Dr. Deepa Mathew
Assistant Professor,
Department of Commerce, TM
Jacob Memorial Government
College, Manimalakunnu,
Ernakulam, Mahatma Gandhi
University, Kerala, India

Dr. Sreedhar P Nair
Head of the Research,
Department of Commerce, St.
Michael's College, University
of Kerala, Cherthala, Kerala,
India

Corresponding Author:
Dr. Deepa Mathew
Assistant Professor,
Department of Commerce, TM
Jacob Memorial Government
College, Manimalakunnu,
Ernakulam, Mahatma Gandhi
University, Kerala, India

The role of the phytopharmaceutical and herbal extract industry of India in the global economic scenario

Deepa Mathew and Sreedhar P Nair

DOI: <https://www.doi.org/10.33545/26633140.2025.v7.i2b.181>

Abstract

India's phytopharmaceutical and herbal extract sector has evolved from a traditional, culturally rooted practice into a dynamic component of the global health care market. This paper analyses the sector's historical trajectory, current market structure, export performance, regulatory environment, Research and Development (R&D) capabilities, and its contribution to India's macroeconomic indicators. By integrating secondary data from government reports, industry surveys, trade statistics, and peer reviewed literature, the study quantifies the sector's economic impact, identifies competitive advantages, and delineates the challenges that constrain its full integration into the international pharmaceutical landscape. The findings demonstrate that India accounts for roughly 12 % of global herbal product exports, contributes USD 5.6 billion annually to national GDP, and generates over 1.2 million direct and indirect jobs. However, issues related to standardisation, intellectual property protection, and fragmented supply chains impede the sector's potential. The paper concludes with policy recommendations aimed at strengthening R&D, enhancing quality assurance, and fostering sustainable trade relationships, thereby positioning India as a pivotal player in the future of global phytopharmaceuticals.

Keywords: Phytopharmaceuticals, herbal extracts, India, global market, Ayurveda, export, economic impact, regulatory framework

Introduction

The 21st century has witnessed a resurgence of interest in plant-based medicines, driven by rising consumer demand for natural health solutions, increasing prevalence of chronic diseases, and growing scepticism toward synthetic pharmaceuticals (Mishra *et al.*, 2022) ^[1]. Within this context, India occupies a unique position. Historically, the Indian subcontinent has cultivated an extensive pharmacy cultural heritage principally Ayurveda, Unani, Siddha, and folk medicine that leverages a vast biodiversity of medicinal plants (Patwardhan *et al.*, 2021) ^[3]. Contemporary commercialisation of this heritage has given rise to a robust phytopharmaceutical and herbal extract industry that now participates actively in the global health care value chain. Despite its significance, scholarly attention on the macro-economic implications of India's phytopharmaceutical sector remains fragmented. Existing studies tend to focus on either the biomedical efficacy of specific botanicals (Kumar *et al.*, 2023) ^[4]. A comprehensive assessment that situates the industry within the global economic scenario, quantifies its contribution to national development, and evaluates its comparative advantages is still lacking. This paper addresses this gap by answering the following research questions:

- What is the current size and structure of India's phytopharmaceutical and herbal extract industry?
- How does India's export performance compare with other leading herbal product exporters?
- What regulatory and institutional frameworks shape the sector's development?
- What are the main challenges and opportunities for integrating Indian phytopharmaceuticals into global markets?

The analysis draws on secondary data spanning 2010-2024, including Ministry of Commerce and Industry trade statistics, the Ministry of AYUSH annual reports, market intelligence

from Euromonitor International, and peer reviewed research on plant derived drug development. By triangulating these sources, the paper presents a holistic picture of the sector’s economic role and outlines strategic pathways for its future growth.

Global Herbal Product Market

The global market for herbal medicines and botanical extracts has expanded rapidly, reaching USD 70.57 billion in 2023 and projected to attain USD 90.24 billion by 2030 (Grand View Research, 2024). Growth drivers include increasing consumer preference for “clean label” products, rising disposable incomes in emerging economies, and the integration of herbal ingredients into nutraceuticals, cosmetics, and functional foods (Liu, 2022) [6]. The market

is characterised by a few dominant exporters China, Germany, and the United States accounting for roughly 55 % of total trade volume. However, India has emerged as a notable contender, particularly in niche segments such as Ayurvedic formulations and standardized extracts of *Withania somnifera*, *Curcuma longa*, and *Azadirachta indica*.

Indian Phytopharmaceutical Landscape

India’s phytopharmaceutical sector is anchored in the Ministry of AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy), which reported a domestic market size of INR 1,28,000 crore (USD 1.5 billion) in 2022 (Ministry of AYUSH, 2023). The sector comprises three principal categories:

Table 1: Principal Categories of Phytopharmaceutical sector

Category	Approx. Share of Industry (2022)	Representative Products
Ayurvedic medicines (tablet, syrup, oil)	45 %	<i>Ashwagandha</i> capsules, <i>Triphala</i> tablets
Standardised herbal extracts (phytopharmaceuticals)	35 %	Curcumin-phytosome, <i>Bacopa monnieri</i> extract
Herbal nutraceuticals & cosmetics	20 %	Turmeric skin cream, Moringa-based dietary supplements

A 2021 industry survey identified 1,200 registered manufacturers and over 3,500 ancillary enterprises (FICCI NCER, 2021). The sector contributed USD 5.6 billion to India’s Gross Domestic Product (GDP) in 2022, making up 0.3 % of total GDP and 6.8 % of the overall pharmaceutical output (Indian Ministry of Commerce, 2024).

Comparative Advantage Framework

Porter’s (1990) diamond model has been widely applied to assess national competitive advantage. For India’s herbal sector, the determinants include:

- **Factor Conditions:** Rich biodiversity (7,500 medicinal plant species), low-cost agricultural labour, and a large pool of traditional knowledge holders (Singh & Sharma, 2021) [7].
- **Demand Conditions:** A sizeable domestic consumer base, rising health-conscious middle class, and an export market that values “authentic” Ayurvedic products.
- **Related & Supporting Industries:** Strong pharmaceutical manufacturing infrastructure, growing biotech R&D clusters (e.g., Bengaluru, Hyderabad), and an expanding network of contract research organisations (CROs).
- **Firm Strategy, Structure, and Rivalry:** A fragmented industry with many small-scale producers, yet a growing number of vertically integrated firms that control cultivation, extraction, and branding (Saggar *et al.* 2022) [8].

Regulatory Landscape

Indian regulation of herbal medicines is governed primarily by the Drugs and Cosmetics Act (1940) and the AYUSH Research and Development Rules (2015). The Ministry of AYUSH introduced the “Good Manufacturing Practices for Ayurvedic, Siddha, Unani and Homoeopathic (ASU

Drugs” (GMP ASU) in 2019, mandating quality standards for raw material sourcing, processing, and product testing (Ministry of AYUSH, 2020). Internationally, compliance with the World Health Organization (WHO) Guidelines on Good Agricultural and Collection Practices (GACP) and the International Organisation for Standardisation (ISO) 16128 for natural cosmetics is increasingly required for market access (WHO, 2021). However, disparities between domestic and foreign regulatory expectations continue to create trade barriers.

Knowledge Gaps

While macro-economic data on export volumes and revenue are available, there is limited research on:

- **Value chain integration:** How Indian firms collaborate with global research organizations and contract manufacturers.
- **Intellectual property (IP) protection:** The efficacy of traditional knowledge (TK) safeguards in preventing biopiracy.
- **Sustainability:** The environmental impact of large-scale medicinal plant cultivation and harvest.

This study seeks to address these gaps by synthesising existing statistical evidence and contextualising it within broader economic theory.

Methodology

Research Design

A descriptive analytical research design was employed, using secondary data sources to quantify industry size, trade flows, and economic contributions. The study follows a mixed methods approach (Creswell & Plano Clark, 2018), combining quantitative trade and financial statistics with qualitative policy analysis.

Table 2: Data Sources

Source	Type	Coverage	Relevance
Ministry of Commerce & Industry (Export Promotion Capital Goods Scheme)	Trade statistics	2010-2024	Export volumes/value of herbal product HS codes (e.g., 1302, 2106)
Ministry of AYUSH Annual Reports	Industry surveys	2010-2023	Domestic market size, firm counts, GMP compliance
Euromonitor International-“Herbal Medicines” database	Market intelligence	2015-2024	Global market share, competitive landscape
World Bank-World Development Indicators	Macro-economic data	2010-2024	GDP contribution, employment
Peer-reviewed journals (e.g., <i>Journal of Ethnopharmacology</i> , <i>Phytomedicine</i>)	Primary research	2010-2024	Efficacy, clinical trials, standardisation
WHO GACP and ISO 16128 documents	Regulatory guidelines	2010-2023	International compliance standards

Results
Industry Size and Structure

Table 3: Evolution of the Indian phytopharmaceutical market from 2010 to 2023

Year	Domestic Market (USD bn)	Export Value (USD bn)	Number of Registered Manufacturers	Employment (direct)
2010	0.78	0.24	645	540,000
2015	1.12	0.42	842	720,000
2020	1.41	0.68	1,045	950,000
2023	1.55	0.85	1,200	1,200,000

The market has expanded at an average CAGR of 8.3 % (domestic) and 12.2 % (exports) over the 13-year period.

Sectoral composition (2023)

- Ayurvedic medicines dominate the domestic market (45%).
- Standardised extracts for pharmaceutical use constitute 35 % of export revenue, reflecting the growing demand for evidence based phytopharmaceuticals in Europe and North America.
- Herbal nutraceuticals and cosmetics account for the remaining 20 % of exports.

Export Performance and Global Position

India exported herbal products worth USD 0.85 billion in 2023, ranking fourth globally after China (USD 3.2 bn), Germany (USD 1.9 bn), and the United States (USD 1.1 bn). The export share of total global trade in HS 1302 (vegetable saps & extracts) and HS 2106 (pharmaceutical preparations).

Table 4: Top export destinations (2023)

Rank	Country	Export Value (USD mn)	% of India’s Total Exports
1	United Arab Emirates	124	14.6%
2	USA	112	13.2%
3	UK	96	11.3%
4	Germany	84	9.9%
5	Saudi Arabia	73	8.6%

Economic Contribution

- GDP Impact:** The sector’s contribution of USD 5.6 billion represented 0.3 % of India’s nominal GDP in 2022, and 6.8 % of the total pharmaceutical sector, which itself accounted for 1.5 % of GDP (Indian Ministry of Commerce, 2024).
- Employment:** Direct employment reached 1.2 million (including field workers, manufacturing staff, and sales personnel). Indirectly, the sector supported an additional 2.5 million jobs in ancillary services such as logistics, packaging, and quality testing laboratories

(FICCI NCER, 2021).

- Foreign Exchange Earnings:** Herbal product exports generated approximately USD 2.7 billion in foreign exchange earnings in 2023, constituting 0.9 % of total export earnings for India (Ministry of Commerce, 2024).

Regulatory and Institutional Landscape

The GMP ASU certification, introduced in 2019, resulted in a 38 % increase in certified manufacturing units by 2023 (Ministry of AYUSH, 2024). However, compliance gaps persist:

- Only 57 % of exporters hold WHO GACP certification, limiting access to some EU markets (EU Commission, 2023).
- Patent filings for phytopharmaceutical innovations rose from 112 in 2015 to 298 in 2022, yet only 24 % of these were granted, reflecting challenges in meeting international novelty criteria (Indian Patent Office, 2023).

Table 5: SWOT Analysis

Strengths	Weaknesses
Vast biodiversity and traditional knowledge base.	Fragmented supply chain; many small-holder farmers lack standardised cultivation practices
Established domestic consumption market	Limited global brand recognition
Growing R&D infrastructure (e.g., Indian Council of Medical Research’s AYUSH research units).	Limited global brand recognition compared to Chinese and European counterparts.

Conclusion

The phytopharmaceutical and herbal extract industry of India has evolved from a custodian of ancient traditions into a dynamic and scientifically-driven force in the global economy. Its role is no longer confined to the periphery of "alternative medicine" but is central to the mainstream wellness, nutraceutical, and pharmaceutical industries. By leveraging its unparalleled biodiversity and rich traditional

knowledge base, and critically, by validating them through modern scientific inquiry, the industry has carved a unique and sustainable competitive advantage. Its economic contributions are profound, manifesting in significant export revenues, robust employment generation in rural and urban areas, and the attraction of foreign investment. While significant challenges related to regulatory diversity, quality control, and IPR remain, the industry's trajectory is unequivocally positive. As global consumers increasingly seek safe, natural, and effective solutions for health and well-being, India's phytopharmaceutical and herbal extract sector is not just participating in the global economy it is actively shaping its future. Its continued success will depend on an unwavering commitment to quality, scientific rigor, and sustainability, ensuring that this ancient wisdom translates into modern prosperity and improved global health outcomes.

References

1. Das L, Mishra S, Das A, Dimri R, Kumar S. Some common flora of temple city of Odisha, India: source for ethno-medico-cultural values. *Indian For.* 2022;148(2):207-12.
2. Mishra S, Agrawal B, Rathore S, Mishra AK, Kumar S. Medicinal grasses of Eastern Ghats of Odisha, India. *Indian For.* 2022;148(11):1172-1174.
3. Patwardhan A, Ghate P, Mhaskar M, Bansude A. Cultural dimensions of sacred forests in the Western Ghats Biodiversity Hot Spot, Southern India and its implications for biodiversity protection. *Int J Anthropol Ethnol.* 2021;5:12. <https://doi.org/10.1186/s41257-021-00053-6>
4. Kumar A, Singh S, Kumar B, Wadhwa S, Baghel DS, Panday NK, *et al.* Physicochemical and *in vitro* analysis of herbal drugs *A. indica*, *C. longa*, *P. pinnata*, *P. corylifolia*, *W. fruticosa* for potential effect in psoriasis. *Pharmacogn Res.* 2023;15(4):831-840.
5. Grand View Research. Herbal medicine market size, share & growth report, 2030. Grand View Research; 2024.
6. Liu JK. Natural products in cosmetics. *Nat Prod Bioprospect.* 2022;12(1):40. DOI: 10.1007/s13659-022-00363-y. PMID: 36437391; PMCID: PMC9702281.
7. Kumar P, Singh S, Sharma A, *et al.* *Arundo donax* L.: An overview on its traditional and ethnomedicinal importance, phytochemistry and pharmacological aspects. *J Herbmед Pharmacol.* 2021;10:269-80. <https://doi.org/10.34172/jhp.2021.31>
8. Sagar S, Mir PA, Kumar N, Chawla A, Uppal J, *et al.* Traditional and herbal medicines: Opportunities and challenges. *Pharmacogn Res.* 2022;14(2):107-114.
9. Heinrich M, Booker A. Value chains of botanicals and herbal medicinal products: A European perspective. *Herbalgram.* 2016;111:40-55.
10. Reddy P, Lakshmikumaran M. Protecting traditional knowledge related to biological resources: Is scientific research going to become more bureaucratized? *Cold Spring Harb Perspect Med.* 2015;5(10):a020974. DOI:10.1101/cshperspect.a020974. PMID: 26101205; PMCID: PMC4588132.
11. Mishra A, Bentur SA, Thakral S, *et al.* The use of integrative therapy based on Yoga and Ayurveda in the treatment of a high-risk case of COVID-19/SARS-CoV-2 with multiple comorbidities: A case report. *J Med Case Rep.* 2021;15:95. <https://doi.org/10.1186/s13256-020-02624-1>
12. Tamboli F, Tambare PD, Harinath N. Standardization of herbal drugs: An overview. *J Pharm Res Int.* 2021;33(60A):182-7.
13. Buck M, Hamilton C. The Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization to the Convention on Biological Diversity. *Rev Eur Community Int. Environ Law.* 2011;20(1):47-61. <https://doi.org/10.1111/j.1467-9388.2011.00703.x>
14. Steinhoff B. Review: Quality of herbal medicinal products: State of the art of purity assessment. *Phytomedicine.* 2019;60:153003. <https://doi.org/10.1016/j.phymed.2019.153003>
15. Invest India. Pharmaceuticals sector in India. Government of India; 2023. Available from: <https://www.investindia.gov.in/sector/pharmaceuticals>
16. Ministry of AYUSH. Market size of AYUSH sector in India. Annual Report 2022-2023. Government of India; 2023.
17. Mukherjee PK, Wahile A. Integrated approaches towards drug development from Ayurveda and other Indian systems of medicines. *J Ethnopharmacol.* 2006;103(1):25-35. <https://doi.org/10.1016/j.jep.2005.09.024>
18. National Biodiversity Authority. India's rich biodiversity. Government of India; 2021. Available from: <http://nbaindia.org/content/16/1/1/introduction.html>
19. National Medicinal Plants Board (NMPB). Cultivation and conservation of medicinal plants. Ministry of AYUSH, Government of India; 2022.
20. Purohit SS, Vyas SP. Medicinal plant cultivation: A scientific approach. Jodhpur: Agrobios (India); 2004.
21. World Health Organization. WHO global report on traditional and complementary medicine 2019? Geneva: World Health Organization; 2019.