



## Agro-based Innovations and Herbal Product Manufacturing in Maharashtra: Strengthening the Agricultural Economy

Varsha V. Nimbalkar<sup>1</sup>, Archana A. Sutar<sup>2</sup> & Archana Thube<sup>3</sup>

<sup>1,2,3</sup>Dr. D. Y. Patil Arts, Commerce and Science College, Akurdi, Pune-44.

Corresponding Author – Varsha V. Nimbalkar

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### Abstract:

Herbal product manufacturing represents a transformative agro-based innovation that bridges traditional ethnobotanical knowledge with modern industrial applications. Maharashtra, with its diverse agro-climatic zones and vast biodiversity, has emerged as a primary hub for herbal product development in India. This paper explores the critical role of herbal manufacturing in bolstering the state's agricultural economy, emphasizing its capacity for rural development, employment generation, and sustainable resource management. By integrating scientific advancements with traditional practices, the sector enhances both product quality and global market reach, positioning Maharashtra as a leader in the bio-economy.

**Keywords:** Agriculture, Economy, Herbal Products, Maharashtra

### Introduction:

Agro-based industries are essential for enhancing value addition in the primary sector. Among these, herbal product manufacturing is uniquely positioned due to its reliance on medicinal flora and traditional healing systems. Maharashtra's geographical diversity provides a robust foundation for the cultivation of high-value medicinal plants. With the global herbal medicine market projected to reach approximately 40 crores by 2034 (Zion Market Research, 2025), the increasing consumer shift toward organic remedies has transformed this industry into a vital component of the state's economic landscape. Current data suggests that the Indian Ayush market alone is set to grow from \$43.3 billion in 2024 to \$200 billion by 2030, driven by rising health consciousness and government support (IBEF, 2025).

### Agro-climatic and Biodiversity Context:

The primary engine of this growth is Maharashtra's varied agro-climatic zones, ranging

from the high-rainfall Konkan coast to the semi-arid Vidarbha region. This allows for the cultivation of over 111 species identified for ethnomedicinal use in local healthcare (Sarate & Vaishnavi, 2025). Key species such as *Withania somnifera* (Ashwagandha) and *Asparagus racemosus* (Shatavari) are increasingly integrated into commercial supply chains. Research by Sanjay Kumar (2024) in the Chandrapur district highlights that tribal communities, such as those in Gondpipari, possess advanced knowledge of forest ecosystems and sustainable utilization, which serves as a critical resource for the industry.

### Agro-based Innovations in Manufacturing:

Innovation in this sector is driven by the synthesis of ancient formulations with cutting-edge technologies. Leading innovators like Dr. Dnyaneshwar Waghchoure (2025) of the Ashwamedh Group have developed over 50 specialty biotech products for organic crop management and 52 human healthcare Ayurvedic

formulations, demonstrating the scale of professionalization in the state. Furthermore, modern enterprises are employing sophisticated methods such as supercritical fluid extraction and nanotechnology to enhance the bioavailability of herbal extracts (GSC Online Press, 2025). The adoption of Good Agricultural and Collection Practices (GACP) and digital platforms like the e-CHARAK mobile application have further streamlined the supply chain, allowing small producers to access wider markets (NMPB, 2025).

### Economic Contributions and Socio-Economic Impact:

The economic impact of the herbal sector is profound, offering returns significantly higher than traditional cereal crops. For instance, Ashwagandha cultivation can yield net profits of up to ₹3 lakh per acre (Singh et al., 2023). This value addition fosters entrepreneurship through the development of herbal clusters, particularly empowering women-led self-help groups in the Konkan and Western Maharashtra regions. These cooperative models not only improve livelihoods but also ensure the preservation of indigenous knowledge and the promotion of sustainable harvesting (MGIRI, 2024).

Medicinal Plant (Scientific Name)	Common Name	Market Value (Approx. ₹/kg)	Annual Growth Rate (CAGR)	Major Cultivation Zones in MH	Key Industrial Applications
<i>Withania somnifera</i>	Ashwagandha	₹300 – ₹550	12.5% – 17%	Vidarbha, Marathwada, Ahmednagar	Pharmaceuticals, Stress relief supplements
<i>Asparagus racemosus</i>	Shatavari	₹400 – ₹650	9% – 12%	Pune, Nashik, Satara	Women's health products, Nutraceuticals
<i>Ocimum sanctum</i>	Tulsi	₹100 – ₹250	5% – 9%	Throughout Maharashtra	Herbal teas, Ayurvedic formulations, Oils
<i>Tinospora cordifolia</i>	Guduchi (Giloy)	₹40 – ₹120	10% – 15%	Thane, Palghar, Gadchiroli, Akole	Immunity boosters, Fever treatments
<i>Aloe barbadensis</i>	Aloe Vera	₹5 – ₹15 (Leaf)	8% – 11%	Solapur, Aurangabad, Sangli	Cosmetics, Skin care, Beverages
<i>Chlorophytum borivilianum</i>	Safed Musli	₹1,200 – ₹2,000	10% – 14%	Mumbai, Thane	Vitality supplements, High-end tonics

### Challenges and Policy Frameworks:

Despite its potential, the sector faces hurdles such as unorganized market structures and the dominance of middlemen. To address these gaps, the National Medicinal Plants Board (NMPB) has supported 25 in-situ conservation

projects and 23 herbal gardens within Maharashtra as of 2023 (Ministry of Ayush, 2023). Furthermore, the state has recently seen a significant increase in AYUSH-related MSMEs, growing nearly 40% between 2021 and 2023 (IBEF, 2025). Strengthening public-private

partnerships will be essential to ensure that smallholders can meet rigorous quality and certification standards like WHO-GMP and ISO.

### Conclusion:

Herbal product manufacturing in Maharashtra exemplifies agro-based innovation that strengthens the agricultural economy. By leveraging biodiversity, traditional knowledge, and modern technology, the sector can create sustainable livelihoods and position Maharashtra as a global leader in herbal industries. Addressing challenges through policy support and infrastructure development will be crucial for realizing the full potential of this dynamic sector.

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