

Ayush Sector in India: Prospects and Challenges



RIS
Research and Information System
for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

Ayush Sector in India: Prospects and Challenges



RIS
Research and Information System
for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

Acknowledgements

This Report has been prepared under the guidance of Professor Sachin Chaturvedi, Director General by the Research Team comprising Professor T. C. James, Professor S. K. Mohanty, Dr Priyadashi Dash, Dr Namrata Pathak, Dr Pankhuri Gaur and Mr Apurva Bhatnagar. We are thankful to the Forum of Assessment of AYUSH Market Size (FAAMS); Dr Amit Agarwal, CEO, Natural Remedies; and Dr Arvind Sakhlani, Vice President Agri-Technology SAMI Laboratories for valuable information provided. Publication of the Report has been undertaken by the Publication Unit of RIS. Usual disclaimers apply.

© RIS, 2021

ISBN: 81-7122-168-8

Published in October 2021 by:



RIS

**Research and Information System
for Developing Countries**

विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

Zone IV B, 4th Floor, India Habitat Centre

Lodhi Road, New Delhi 110 003, India

Tel.: +91-11-24682177-80; Fax: +91-11-24682173-74

E-mail: aic@ris.org.in; dgoffice@ris.org.in

Website: www.ris.org.in

Contents

<i>Preface by Professor Sachin Chaturvedi, Director General, RIS</i>	<i>v</i>
<i>List of Abbreviations.....</i>	<i>vii</i>
<i>Executive Summary.....</i>	<i>ix</i>
Section 1: Major Trends in AYUSH and Allied Industry of India	1
Section 2: Global Herbal Medicinal Industry: Emerging Trends and Patterns.....	7
Section 3: Policy, Performance and Prospects in AYUSH Sector in States	15
Section 4: Performance and Opportunities in AYUSH Manufacturing Sector	29
Section 5: Trade Performance of Indian AYUSH Sector.....	41
Policy Recommendations.....	55
<i>Annexures.....</i>	<i>57</i>
<i>References.....</i>	<i>60</i>

Preface



Professor Sachin Chaturvedi

Director General, RIS

Due to recent buoyant trends, AYUSH industry is expanding and the market size of Indian AYUSH has grown significantly. In the past decades, the global herbal market has also become an economically active sector. Thanks to strong heritage of Indian Systems of Medicine, Indian AYUSH sector is on the cusp of capitalising this trend. Strong support provided by the Ministry of AYUSH on the regulatory, R&D, infrastructure and trade components has helped immensely in creating synergies for ease of business in the sector. This is amply evident in the substantial growth of market size of this sector in the last few years. The AYUSH raw material sector also registered rise in demand owing to COVID-19 crisis.

Pharmaceuticals being the core of AYUSH, the sector constitutes several allied industries including medicinal plants, extracts, derivatives and nutraceuticals. All components have demonstrated impressive growth performance domestically and in exports. However, the sectors' full potential is yet to be tapped.

As India moves up in the global ease of business rankings ably supported by schemes such as 'Make in India' and 'Start up India', regulatory reforms such as 100 per cent FDI and perpetual licensing are expected to give further boost to investor confidence in the sector. Tapping on this potential, State Industrial Policies have included special incentives for promoting AYUSH manufacturing. Challenges in the value chain linkages such as raw materials are also being aggressively addressed both at the central and state levels.

In this backdrop, the present Report "AYUSH Sector in India: Prospects and Challenges" by the Forum on Indian Traditional Medicine (FITM), at RIS aims to provide an understanding of the AYUSH industry in the global and domestic settings. It also gives a firm and state level analysis of the sector, its competitiveness, current strategies, challenges and recommendations for domestic and trade policy priorities. I am sure the Report will serve as a valuable reference for policy makers, investors, academia and practitioners associated with understanding and promoting growth of AYUSH industry.

I also take this opportunity to thank Professor T.C. James, Professor S.K Mohanty and the other RIS team of members including Dr Priyadashi Dash, Dr Namrata Pathak, Dr Pankhuri Gaur, and Mr Apurva Bhatnagar for coming out with this important Report.

A handwritten signature in black ink, appearing to read "Sachin Chaturvedi". The signature is written in a cursive style with a horizontal line underneath.

Sachin Chaturvedi

List of Abbreviations

AYUSH Export Promotion Council	AEPC
Association of Southeast Asian Nations	ASEAN
Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	BIMSTEC
Certificate of Pharmaceutical Products	COPP
Central Drug Research Institute	CDRI
Central Insititue of Medicinal and Aromatic Plants	CIMAP
Central Council of Research in Ayurvedic Sciences	CCRAS
Central Council of Scientific and Industrial Research	CSIR
Compound Annual Growth Rate	CAGR
Common facility centres	CFC
Drug Controller General (India)	DCGI
European Medicines Agency	EMA
Food Chemical Codex	FCC
Fast Moving Consumer Goods	FMCG
Good Manufacturing Practice	GMP
Global Value Chain	GVC
Good Agricultural Practices	GAP
Guidelines of Forest Operations	GFC
Government to Business Services	G2B
Harmonised Systems of Codes	HS

Indian Systems of Medicines	ISM
Indian Council of Agricultural Research	ICAR
Insurance Regulatory and Development Authority	IRDA
Institute of Himalayan Bioresource Technology	IHBT
International Standards Organisation	ISO
Medicinal and Aromatic Plants	MAP
Medicines and Healthcare products Regulatory Agency	MHRA
National Medicine Plants Board	NMPB
National AYUSH Mission	NAM
Natural Health Products Directorate	NHPD
National Botanical Research Institute	NBRI
Pharmaceutical Export Promotion Council	PHARMEXIL
Strategic Policy & Facilitation Bureau	SPFB
Sanitary and Phytosanitary Measures Agreement	SPS
South Asian Association for Regional Cooperation	SAARC
Therapeutic Goods Administration	TGA
Traditional Knowledge	TK
Transfer of Technology	ToT
U.S Food and Drug Administration	USFDA
Value-Added Products	VAP
World Health Organisation	WHO

Executive Summary

The AYUSH industry is currently undergoing a significant transition. Buoyed by the growing global and domestic demand and enabled by a strong support to regulatory, R&D and back-end infrastructure by the Ministry of AYUSH, the sector has shown tremendous growth in the last few years.

With the current turnover of US\$ 18.1 billion, the market size of Indian AYUSH industry as a whole has grown by 17 per cent during 2014-2020. During the same period, different product segments have grown at much higher rate than the overall industry. Plant derivatives experienced 21 per cent growth in the period 2014-2020 followed by nutraceuticals (20.5 per cent), pharmaceuticals (15.8 per cent), plant extracts 14.7 per cent and herbal plants (14.3 per cent). Despite a slump in economic activity in 2020 due to the pandemic the industry is projected to reach US\$ 20.6 billion in 2021 and US\$ 23.3 billion in 2022.

Ease of business in the sector is being facilitated at several fronts. Along with special incentives under 'Make-in-India' and 'Start Up India', India allows 100 per cent FDI in AYUSH industry. At the central level, programmes for sustained supply of medicinal plant through cultivation/collection and market linkage

in contract farming are being undertaken by NMPB. R&D by CCRAS, CSIR, ICAR and 14 forest research institutes are enabling agrotechnology on the medicinal plant sector. An investment friendly industry-academia partnership for transfer of technology (ToT) through major research institutions like CCRAS and CSIR and digitization through e-Charak, e-Aushadi are some of the infrastructure support being provided by Ministry of AYUSH. Ease of business is further encouraged through recently introduced perpetual licensing norms.

There is also a strong enabling environment for AYUSH in most states of India. Several states have industrial/investment policies along with industrial hubs/clusters for AYUSH product manufacturing. States' encouragement of raw material cultivation further facilitates value chain integration in the sector. At the same time, some states have capitalised their advantage in AYUSH service sector, as wellness destinations, to promote product manufacturing.

The manufacturing industry itself demonstrates encouraging trends. Stronger performance of the industry holds true for different sizes of firms in both profits and exports. Labour productivity of the sector is at par with the pharmaceutical industry while the

growth rate of total output has surpassed the major industries like computers/electronics and food beverage.

While the sector has shown strong export performance with the AYUSH pharmaceutical sector being the flag bearer of the flourishing trade surplus,

the attractiveness of the sector lies in fact that the trade potential is largely underutilised. Strengthening of domestic standards subscriptions, ensuring traceability of the value chain, and formulating global standards with international standard bodies are some measures that may be required for confidence in brand AYUSH globally.

Section: I

Major Trends in AYUSH and Allied Industry of India

AYUSH systems, particularly Ayurveda, Siddha and Yoga being indigenous to India, are regarded as the oldest healthcare systems in the world. These systems constitute both products and services. Following independence in 1947 AYUSH has been recognized under the Indian Medicine Central Council (IMCC) Act 1970 whereas education is regulated by a statutory body known as Central Council of Indian Medicine (CCIM) and the Drugs & Cosmetics Act 1940 regulates manufacturing and sales of Ayurveda drugs. However, the AYUSH product industry has evolved to include not only AYUSH classical formulations and proprietary products but various other products as well. Other herbal industries are also often included as a part of the sector. The industry is dependent on medicinal plants as its primary raw materials. In that sense, Medicinal and Aromatic Plants (MAPs) are a strategic allied industry; the supply gap in which could greatly impact the product industry.

1.1 Production

With six-fold rise in output in just nine years (2005-2006 to 2014-2015), India has emerged as a leading market of AYUSH products in the world.

AYUSH products cover a diverse range, including classical and value added products such as formulations, extracts, derivatives, nutraceuticals and fast-moving consumer goods. Drawing inputs from Goraya and Ved (2007), Goraya and Ved (2008), Goraya and Ved (2017), CII (2018) and IMARC (2021), it is quite evident that AYUSH industry in the country is experiencing rapid growth in the recent years. With the current turnover of US\$ 18.1 billion, the market size of Indian AYUSH industry as a whole has grown by 17 per cent growth during 2014-2020. During the same period, different product segments have grown at much higher rate than the overall industry. For instance, plant derivatives experienced 21 per cent growth in the period 2014 -2020 followed by nutraceuticals (20.5 per cent), pharmaceuticals (15.8 per cent), plant extracts 14.7 per cent and herbal plants (14.3 per cent). Despite slump in economic activity in 2020 due to the pandemic the Indian AYUSH industry is projected to reach US\$ 20.6 billion in 2021 and US\$ 23.3 billion in 2022. India has grown faster in AYUSH market as compared to the world. In terms of global share, India accounts for about 2.8 per cent of global AYUSH market which would broadly hold even though disruptions in production are not ruled out. Apart from cosmeceuticals,

growth in AYUSH product segments for India was extraordinarily higher than the trends in the global market. Interestingly, the share of nutraceuticals and plant derivatives which are value-added segments of the AYUSH industry are rising over the years. It suggests India's steady elevation from exporters of raw materials and extracts to leading producer of high-value products. Various studies have attempted to estimate the market size of AYUSH industry by using varied methodologies. A timeline of estimates produced by different studies are given in Table 1.1.

In general, Ayurveda sector in India has registered 17 per cent growth which is consistent with the growth trajectory of the Global Ayurveda Industry. As estimated by IMARC (2021), the Ayurveda market is expected to grow by round 15 per cent during 2020-2025. Rising trends are also observed for raw materials segment. This is marked by steady growth in value of raw materials from 20 per cent in 2005-06 to 25 per cent in 2019-20. Moreover, the demand for raw materials during COVID-19 increased significantly leading to rise in prices of those products. Statistics from NMPB indicates two to three-fold increase in value of herbal raw materials (as per Née much Mandi rates) between January and September 2020. Further, the All India Survey of Prioritised Medicinal Plants in 2019 suggests continued surge in demand for high value medicinal plants (by 50 per cent in a year) despite 26 per cent slump in overall supply (IBEF, 2020). Given high demand for such products, there is

a need to scale up medicinal plant production in the country.

For medicinal plants, the creation of National Medicine Plants Board (NMPB) in 2000 has provided a platform for governance and regulation of the sector though several forest and biodiversity laws. NMPB is entrusted with implementing policies for growth of trade, conservation, cultivation and processing of medicinal plants across the country. It is estimated that these initiatives would bring the total production of medicinal plants in the country to 2.5 lakh tonne where the total potential for medicinal plant cultivation in the country is estimated at 3.19 lakh tonne (Prasad, 2017). In the Atmanirbhar COVID relief package, the Finance Ministry also announced an assistance of Rs. 4,000 crore for promotion of medicinal plant cultivation in the country. Furthermore, NMPB has also taken up the task of setting up 800 hectares of herbal corridor along the banks of river Ganga. This corridor is expected to generate an income of Rs. 5000 crores for the farmers (Kumar, 2020).

1.2 Trade

Neutraceuticals constitute a dominant share of India's total AYUSH exports; however other segments like pharmaceuticals and herbal plants offer promising opportunities in the future.

Neutraceutical is the dominant sector in AYUSH industry accounting for 42.3 per cent of the domestic market. Pharmaceuticals

Table 1.1 Estimates of AYUSH Industry Size by various Reports

Study	Year	Size of Industry
Ved and Goraya, 2017 (Ayurveda)	2014-15	USD 2.85 Bn
CII, 2018 (Ayurveda)	2016	USD 3 Bn
CII, 2020 (AYUSH)	2020	USD 15 Bn
Present Study (AYUSH)	2020	USD 18.1 Bn

are also coming up with a share of 30 per cent follow by herbal plants of 13.8 per cent. As a result, exports of pharmaceuticals have the largest share in country's total exports of AYUSH products. As nutraceuticals and plant derivatives are high-growth segments of the industry, trade in those products would rise significantly in the coming years in addition to surge in domestic consumption.

Several market studies have provided estimates of the size of raw material trade in AYUSH products in the country. EXIM bank (through FRLHT- 2003) assessed export potential of MAPs and surveyed 1,200 raw materials (including 880 medicinal plants) in trade. This study estimated total consumption of raw materials (including exports) as 1,28,000 MT for 2001 (value of Rs. Rs. 847 crore). Goraya and Ved (2007) study based on survey of demand and supply of 960 medicinal plant species and estimated an annual turnover of

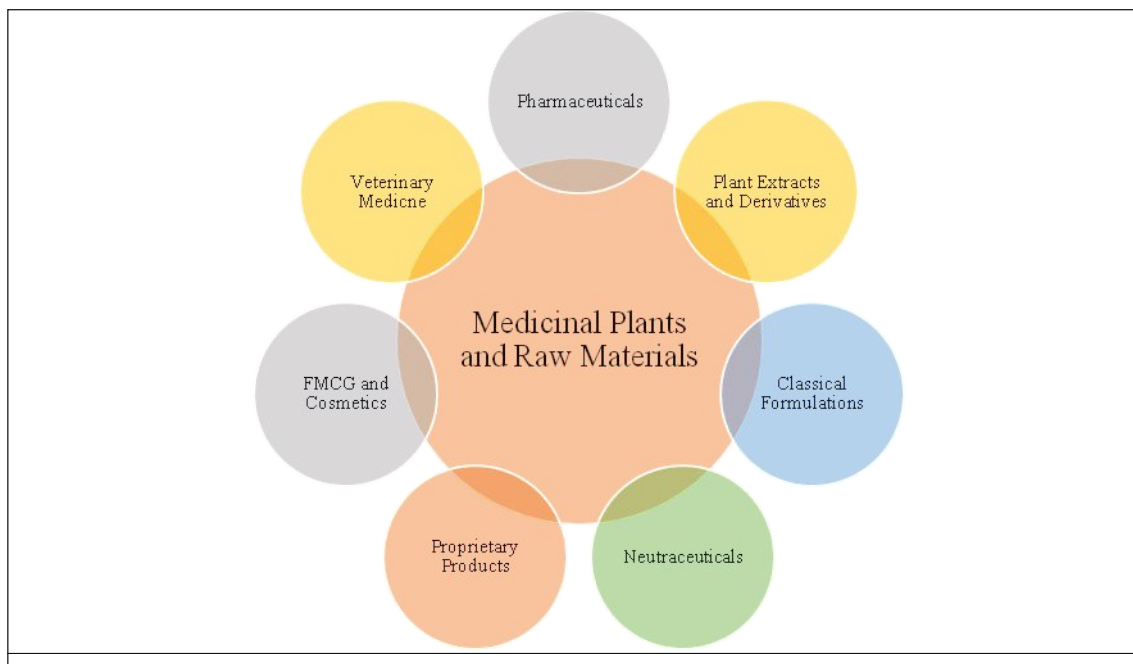
medicinal plant sector in India at Rs. 1,070 crore for the year 2005-06. Later, Navdeep et al. (2011) estimated the market size of Indian medicinal herbs at Rs. 7,000 crore. In a subsequent study by Goraya and Ved (2017) who surveyed 692 domestic AYUSH manufacturers in 2014-15 also estimated the size of sector to be Rs.20,000 crore. Note that, in most of these studies the size of medicinal plant and raw material market is in the ratio of 1:3 to the estimated size of AYUSH industry.

1.3 Export Competitiveness

India currently utilizes less than 40 per cent of its total export potential of US\$2.2 billion in herbal plants and extracts sector.

AYUSH industry in India offers tremendous potential for exports. The estimated export potential for the herbal plants and extracts sector is US\$ 2.2 billion. However, the actual utilization of this potential is much less at

Figure 1.1: Various components of AYUSH Industry in India



Source: RIS based on information from various sources.

present. Current exports of US\$ 830 million account for less than 40 per cent of the estimated potential in the sector. Since AYUSH firms in India are catching up fast in terms of product development and value addition, the rest unrealized potential can be suitably harnessed. Foreign trade policy should provide proper incentives to the firms for active participation at global level. Moreover, growing R&D by firms would support maintaining competitiveness in the herbal plants and extract sector.

1.4 Rising Domestic Consumption

Strong pent-up demand for herbal, Ayurvedic and related products contributes to growth of vibrant domestic AYUSH industry.

India's domestic AYUSH industry is emerging vibrant as the sales, product variety, exports, investments, etc. are rising consistently over time. The market size of domestic AYUSH sector is quite large constituting 2.8 per cent of world turnover. Domestic demand for AYUSH products is very high which is evident from the fact that fall in exports during 2015-17 did not affect the sector badly. HS Chapter 30 has the largest share in the sector whereas other sectors are also emerging equally. As mentioned above, since Indian AYUSH industry is expected to grow in 2021 and 2022 with all different segments growing even at a much higher rate, the future growth of the sector is not heavily dependent on exports rather a stable

domestic market. This is also evident from the export-to-sales and import-to-sales ratios. For instance, higher exports-to-sales imply greater dependence on exports and rise in the ratio in the future also magnifies the dependence further. The trends for this ratio do not reveal any such pattern in India yet. Exports-to-sales ratio has fallen steadily over the years from 6.6 per cent in 2010 to 2.2 per cent in 2020. Among firms, large firms and very small firms are having lower export-to-sales ratio indicating enhanced targeting of domestic markets whereas firms with turnover of Rs. 5 to Rs. 250 crores have witnessed steady rise in this ratio. In essence, some MSME firms are orienting their production towards exports.

1.5 Value Chain

India moving up on the value chain ladder in global AYUSH industry marked by sustained rise in exports of pharmaceuticals and nutraceuticals

Indian firms are gradually moving upstream in the AYUSH value chain. Both production and trade of various products are undergoing rapid changes. Unlike the past, India is not only exporting classic ayurveda products and formulations rather the export basket is quite diversified. With greater integration with regional value chains, India may be able to diversify the trade destinations as well. Currently, the order of importance of various

Table 1.2: Leading AYUSH Firms

Company Name	Total Turnover ¹	Turnover on AYUSH License ²	AYUSH Segmentation (%)
Dabur India Ltd.	6236.36	5000	80.2
Patanjali Ayurved Ltd.	8526.62	4500	52.8
Marico Ltd.	6463	1000	15.5
Hindustan Unilever Ltd.	38224	3000	7.8
Glaxosmithkline Consumer Healthcare Ltd.	47820.40	1200	2.5
Lupin Ltd.	11316.6	250	2.2

Source: ¹: Prowess IQ, CMIE, ²: Survey Conducted by NMPB

product segments in terms of their share in industry turnover is pharmaceuticals, plant derivatives, nutraceuticals, and medicinal and aromatic plants and extracts. Since these trends are becoming increasingly visible in recent years, the prospects of India's integration in high-end manufacturing are brighter. Government of India and different state governments have taken policy initiatives to promote AYUSH industry in their respective jurisdictions. Higher indigenous R&D and marketing efforts by firms with incentives by the AYUSH ministry would facilitate effective integration of India in global AYUSH value chain.

1.6 Industrial Growth

As range and variety of products continues to expand, some Indian firms namely Patanjali, Dabur, etc have emerged as local MNCs; which sends strong signals for high growth and diversification in the AYUSH sector

AYUSH products have shown a broad acceptability in Indian market due to which, in the last few years, leading pharmaceutical and FMCG firms have entered the market with proprietary and herbal products. Table 1.2 lists the major firms in the segment that have presence in the AYUSH production. Together these 5 companies have a total turnover of around Rs. 74,000 crores, in which around Rs. 15,000 crores originate from the AYUSH segment. Firms like Dabur and Patanjali whose major focus has been on AYUSH products, market themselves as Ayurvedic firms. Big FMCG and pharmaceutical firms who have entered the AYUSH market owing to its profitability and potential for growth such as Lupin pharmaceuticals, have started a subsidiary of LupinLife (OTC) products derived from Ayurveda, though these are not classical Ayurveda products. Hindustan Unilever, a major FMCG firm offers products under the brand "Lever AYUSH".

1.7 Attractive Sector for Investment

Along with special incentives under 'Make-in-India' and 'Start Up India' India allows 100 per cent FDI in AYUSH industry.

The Ministry of AYUSH has tied up with Invest India to set up a Strategic Policy & Facilitation Bureau (SPFB) for promoting foreign investment into the sector. The Bureau is to undertake activities such as "Knowledge Creation and Management, Strategic & Policy-Making Support, State Policy Benchmarking, Undertaking State Policy benchmarking to formulate uniform guidelines/regulations regarding AYUSH sector in India, Investment Facilitation, Follow up and facilitation of investment cases and MoUs, and coordination among different Department, organisations and States" (Sharma, 2020). The objective of this exercise would be to facilitate planned and systematic growth in the sector and stimulate investments. On the export front, the Ministry of AYUSH along with the Ministry of Commerce has proposed to set up an AYUSH Export promotion council. The council will streamline AYUSH exports from India, and would also help monitoring the trade of traditional medicines in the country. In order to promote entrepreneurship and start-up culture in the sector, the Ministry of AYUSH is also planning to launch five incubation centres across the country. Recent initiatives by the government are likely to boost further growth in the sector. The incubation centres for AYUSH would foster entrepreneurship and employment generation in AYUSH. The fact that many leading pharmaceutical and FMCG firms (like Lupin and Hindustan Unilever) now have a dedicated AYUSH segment which shows the growing interest and investment opportunities in the sector. Initiatives by the government, such as 800 hectares herbal corridor on the banks of Ganga would go long way in ensuring that supply of raw material keeps up with the ever growing demand.

Section: 2

Global Herbal Medicinal Industry: Emerging Trends and Patterns

Rapidly growing herbal medicine sector creating new opportunities for the global community

Herbal medicinal system is a comprehensive medical system which has embarked on non-conventional modern medicines, particularly on herbal sources. As a low cost treatment for chronic diseases, microbial resistances, etc., the herbal medicinal system is effective with almost no side effects unlike many other synthetic drugs (Humber, 2002). As incidence of communicable diseases has declined significantly, the world economy has witnessed surge of non-communicable diseases (NCDs), which could be effectively dealt by the herbal medicinal system (James and Bhatnagar, 2020). WHO (2013) has corroborated the argument by reckoning the efficacy of the alternative system in dealing with NCDs. These factors explain the reasons for which the herbal medicinal sector is expanding at the rate of 7.6 per cent during 2014-19 despite continuation of recession for nearly one and half decades. It may be noted that global output (i.e., real GDP) was growing at the rate of 2.8 per cent during the same period (World Bank, 2021). The present study has estimated the global market size of the herbal sector which was estimated at US\$ 657.5 billion in 2020 and is likely to touch US\$ 746.9 billion

by 2022. As the sector is expanding fast across the globe, there are numerous opportunities existing in number of sectors within the herbal medicinal industry. From the pattern of growth of the industry, it is evident that higher value added sub-sectors are growing faster than primary sectors and the industry is expected to witness expansion of value chain based on trade among the trading economies.

Surging global attention towards development of the sector with respect to regulations and standards

Though the sector witnessed robust growth in the world healthcare system, the regulatory framework at the multilateral level is not yet reached in a comprehensive manner. In the absence of an effective regulatory mechanism to maintain production standards using commonly formulated Good Manufacturing Practice (GMP), the sector faces numerous challenges including attracting confidence of consumers. Multilateral institutions like World Health Organisation (WHO) have acknowledged the role of traditional medicine but have been emphasising on evolving a regulatory framework. WHO traditional medicine strategies, (2002-05 and 2014-23), focused on framing norms, technical

standards, and documents for safety, quality and effectiveness of traditional medicine. In a recent development, the Astana Declaration of the Global Conference on Primary Healthcare in 2018 has lamented that the success of primary health care will be driven by application of both scientific and Traditional Knowledge (TK), which includes Traditional Medicines. Several countries have included Traditional Medicines in their national policies and plans for boosting their traditional medicine sector. WHO (2019) has reported that several countries have introduced National Policy on Traditional Medicine in their domestic health programme and number of such countries multiplied from 25 in 1999 to 98 in 2019.

Lack of information-base in developing an effective global regulatory system

The effectiveness of a regulatory system is critically dependent on credible information base in the healthcare system. Development of national policies based on field data will help and guide growth as well as diversification of the AYUSH sector, and hence, information on the evolution, size and scope of the global market become important. Experiences of countries indicate that key data for the development of healthcare policies are becoming inadequate. In the traditional medicine sector, 99 out of 134 countries reported lack of research data and credible information in 2014, causing the biggest challenge for regulatory system (WHO, 2019). Global and national level efforts are to be made to develop a mechanism to generate data to evolve effective regulatory system.

Towards a comprehensive Definition and taxonomy of herbal medicine

Herbal medicine system as an alternative system of medicine has been prevalent in sizeable number of countries and many of them have been the outcome of fertilization of various systems existing in different parts of the world. For the recognition of these systems, a comprehensive definition of herbal medicinal system was very much warranted.

In this regard, WHO defines herbal medicines to include 'herbs, herbal materials, herbal preparations and finished herbal products that contain as active ingredients parts of plants, or other plant materials, or combinations'. It includes all medicines (including traditional medicines) with plants as active ingredients. For the purpose of this report, given that Indian Systems of Medicines (ISM) mainly constitute plant based ingredients, and an understanding of the global market is drawn from reports on 'herbal medicine and herbal supplements market'. It may be noted that rapid product developments are taking place in the sector and several of them are traded globally. In most of these cases, the volume of trade of these newly developed products doesn't have adequate global trade in order to attract new HS codes for them. In order to facilitate global trade in herbal medicinal products, an appropriate taxonomy of herbal medicinal products may be evolved so that such tradable products within the AYUSH sector can be classified properly to facilitate global trade in this sector.

2.1 Dynamics of the Global Herbal Medicinal Market

Expanding size of the global herbal market, though disproportionate growth performances of its constituent sub-sectors

The global herbal market has been the fastest expanding economically active sector in the past decades. In 2020, the present study estimated the size of the global market at US\$657.5 billion and is expected to reach the level of US\$746.9 billion by 2022. Although the global herbal market comprises of global herbal medicines, herbal extracts, plant derivatives and supplements, growth performances of these sub-sectors differ considerably, and the aggregate sector of herbal medicine grew at the rate of 7.4 per cent per annum during 2014-20. Various sub-sectors, particularly, herbal pharmaceutical sector expanded at the rate of 18.5 per cent during the same period with the market share of 14.1 per cent in 2020, as shown in figure 2.1.

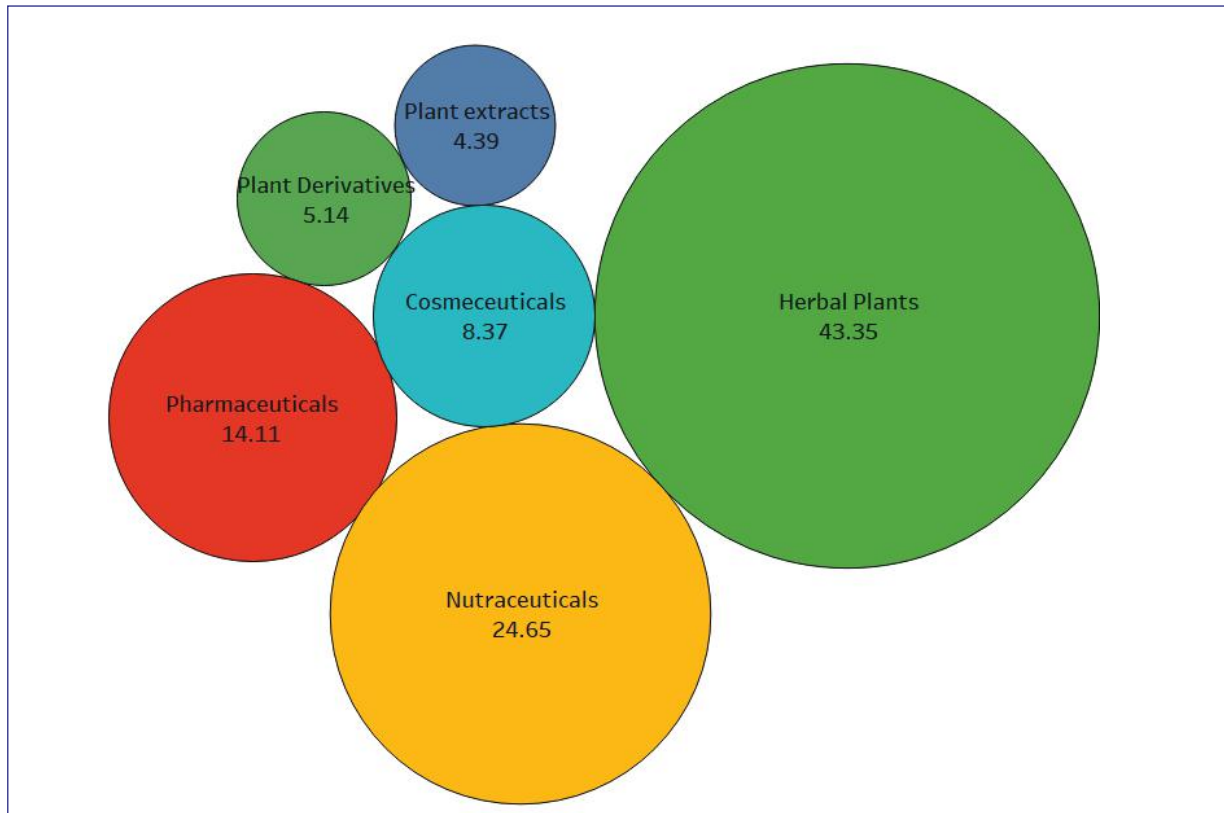
Most studies have produced different estimates of the market size of the Traditional/Herbal Medicinal sector, indicating robust and positive growth of the sector over the years. According to Statista (2017), about 46 per cent of the global herbal medicine market was attributed to the Western herbalism whereas 36.6 per cent and 7.8 per cent of the market could be attributed to traditional Chinese medicines (TCM) and Ayurveda respectively in 2017. It may be noted that the western herbalism is derived from the knowledge of different Traditional Medicine systems. According to the estimates in the present study, the slowest growth performance was noticed in the herbal plant sub-sector and highest growth performance was recorded in the herbal pharmaceutical sub-sector during 2014-20. Growth performance of the sub-sectors improved gradually as we move on the ladder

of Global Value Chain (GVC). The largest gain in the sub-sector was accrued to the herbal pharmaceutical sub-sector and the share of the sub-sector in the overall global herbal medicinal industry increased from 7.8 per cent in 2014 to 14.1 per cent in 2020.

Rapidly growth of the Ayurvedic system of medicine in the global market

Several studies attempted to estimate the size of the global herbal medicinal market with different methodologies. Estimation of the global market size of the herbal medicinal industry is important and several studies attempted in this regard. According to the Statistics MRC study (2017), the size of the global ayurveda industry was estimated at US\$ 3.4 billion. The study also forecasted the industry to grow up to US\$ 9.8 billion by 2022 at a CAGR of 16.2 per cent. In 2017, 'Global Ayurvedic Market

Figure 2.1: Share of sub-sectors in AYUSH market size



Source: RIS based on various studies

Research Report 2020-2026 (2017)' estimated the size of the global ayurvedic market at US\$ 4.5 billion. They forecasted the market to reach US\$ 14.9 billion by 2026, growing at an impressive CAGR of 16.4 per cent per annum. Absolute Report (2021) estimated the size of the global ayurvedic market to be US\$ 7.4 billion in 2020. They also forecasted the market to grow to US\$ 16.4 billion by 2027, growing at an annual rate of 12 per cent during the period. As such, the Global Pharmaceutical Market is expected to grow at the rate of 8 per cent per annum between 2021 and 2025 (IGNW, 2020). Collating the market size and growth rate of Ayurveda from all the three reports mentioned above, the size of Global Ayurveda market ranged between US\$ 7.2 billion to US\$ 9.62 billion in 2021. The global herbal medicinal market, on the other hand, is expected to reach the level of US\$ 411.2 billion by the year 2026 (IGNW, 2020). Therefore, despite posting robust growth performance of the industry, Ayurveda is still projected to constitute a small percentage of the global herbal medicine market.

Global Wellness Institute tracks the growth of wellness industry and also the Traditional and Complementary Medicines within the broad industry. The Global Wellness Economy Monitor report projected the size of wellness industry at US\$ 4.2 trillion (GWI, 2018). Key sectors within the wellness economy include diverse industries ranging from wellness tourism to nutrition and personal care products. The Global Wellness Institute also projected the size of Traditional and Complimentary Medicine Market at UD\$ 360 billion in 2017 (GWI, 2018). The report states that the much of the growth in the wellness and Traditional Medicine (TM) industry will be fuelled by India and China. Both of these countries have rich biodiversity and millennia old heritage of traditional medicinal practices.

The present study observes that the size of the global market for the herbal medicine is estimated at US\$ 657.5 billion in 2020 with a

robust growth of 7.4 per cent during 2014-20. While industry size of the herbal plant was US\$ 285 billion, the corresponding size of the plant extract was estimated at US\$ 28.85 billion in the same year. The nutraceutical segment is estimated at US\$ 162.10 billion, cosmeceuticals at US\$ 55 billion and plant derivatives sub-sector is stood at US\$ 33.79 billion in the aforesaid year. Since most of the TM systems rely heavily on locally available herbs, growth of the herbal medicine market is interdependent on the growth of TM markets and vice-versa. According to the Data Bridge Market Research study, the global herbal medicinal market is expected to reach US\$ 426.43 billion by 2028, growing at a CAGR of 5.34 per cent during 2021-2028. The growth rate reported for herbal medicine sector is much less than that of the Global Ayurveda market. Since herbal products are derived from the raw material base of TM systems, there is a need for boosting medicinal plant production to ensure sustainability of the TM sector.

A cursory look at the available market research on Herbal and Ayurveda medicine sector points out that Ayurveda constitutes a small portion of total herbal market, but the growth potential of Ayurveda is much higher than that of the herbal medicine/supplements sector. The Global Traditional and Complementary Medicine market has been valued at around US\$360 billion (GWI, 2018). However, only a minor share of that market is constituted by Ayurveda which can be valued between US\$ 7.2 billion and US\$ 9.6 billion. The higher growth rate in Ayurveda segment compared to overall herbal medicament segment showcases the potential of Indian Systems of Medicine (ISMs). With a proper strategic vision and operational efficiency in this sector, the Indian AYUSH industry can be a global leader as well as a trend setter in the TM markets worldwide.

Differentiated sectoral growth performances of the herbal medicinal market, indicating value

added sectors becoming the drivers of the global industry

The present report has estimated that the global herbal medicinal sector is close to US\$ 660 billion dollar market, expanding at the CAGR of 7.4 per cent per annum during 2014-20, but all six segments of the industry such as MAPs, plant extracts, nutraceuticals, cosmeceuticals, plant derivatives and herbal pharmaceutical are not registering similar level of growth performances since the second phase of recession in 2014. In this industry, expansion of the sub-sectors is closely linked with the nature of its relative value addition to the industry. StrategyR (2021) estimates the global herbal supplements and remedies market at US\$ 104.6 billion in 2020, and projects the sector to grow at a CAGR of 6.8 per cent to reach US\$ 61.6 billion during 2020-27. While the sector is growing globally, it is observed that a few markets dominate the traditional and herbal medicinal sector. As estimated, with a market size of US\$ 28.3 billion in 2020, the US accounts for 27 per cent of the global industry. Multi-herb preparation, one of the common ways herbal

medicines are packaged into major markets, is forecast to grow at the rate of 8.1 per cent per annum and is expected to reach a market size of US\$ 99.4 billion (StrategyR, 2021). There are other studies emphasising expanding nature of the herbal medicinal market. The Polaris Market Research study (2020) has estimated the size of the Herbal Medicine Market at 84.5 billion, and has forecasted a very high CAGR of 20.5 per cent for the industry. Details of estimates for Traditional and Herbal Medicine markets are presented in Table 2.1, demonstrating diverse estimates of the industry in the global market.

Growing convergence of opinion towards building a comprehensive regulatory systems and standards for the global economy

With increasing popularity of TMs around the globe there is a need to develop regulations and standards on TM with recognition from the global community. Adoption of international standard like ISO/TC for ISMs will facilitate greater acceptability of ISMs. Currently the existing World Health Organisation Guidelines on Good Manufacturing Practices (WHO

Table 2.1: A snapshot of the global traditional and herbal medicine market

Segment	Source	Size of Market (US\$ Bn)	Growth performance (CAGR)
Wellness Industry	Global Wellness Institute (2017)	4500	6.4
Traditional & Complementary Medicine	Global Wellness Institute (2017)	360	-
Herbal Medicine	Data Bridge Market Report	281.3	5.2
Herbal Supplements and Remedies	Strategy R, Global Industry Analytics	104.6	6.8
Herbal Medicine	Market Research Future	126.6	5.9
Global Ayurveda Market	Market Study Report	4.5	16.4
Global Ayurveda Market	Absolute Reports, UK	7.4	12.0
Herbal Medicine	Polaris Market Research	84.5*	20.5
Herbal Medicine (2016 report)	Hexa Research	71.2 [©]	-

Source: Various Industry Reports

Notes: *2019; ©2016

GMP) for herbal medicine serve as an umbrella guideline for all systems of medicines. For certain processes (such as those used heavy metals) at the manufacturing sites for which WHO Guidelines are not available, we need to draft equivalent, sophisticated guidelines for the same. India should lead the development of standards both in ISO and WHO pertaining to ISM sector. Ensuring quality and traceability of TMs at each end of its value chain (from medicinal plants to final product) would instil confidence among consumers and improve standardisation process globally.

2.2 Global Trade in Medicinal Plants and Plant Extracts

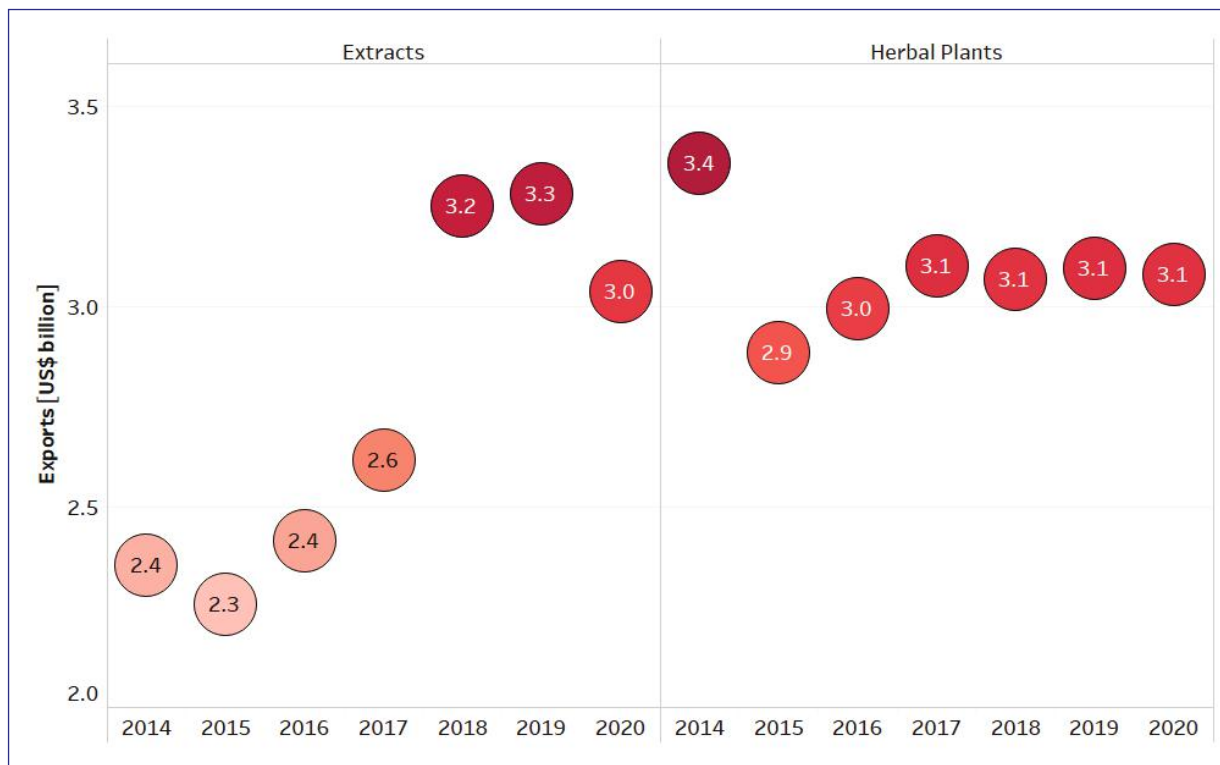
Robust growth in the global trade in herbal medicaments amidst continuation of the global recession

The global trade in the herbal medicinal industry has been buoyant despite continuation

the global recession over the past 14 years. The industry is gradually adhering to strong value chain system where growth and size of MAPs and plant derivatives are at the lower end of the pyramid. It is generally perceived that value added at these two production stages has been strictly low and therefore, markets for these product segments of the herbal medicinal industry are highly inelastic in nature. Though use of herbal medicines is widespread in developed countries, they are traded as herbal supplements in these countries. Herbal supplements often called as western herbalism, are traded extensively in the market of developed countries. Even final medicinal products in leading countries like the US permit sale of herbal medicines as herbal supplements.

Moreover, trade classification of herbal medicinal industry is not universally defined for all segments of the industry in terms of Harmonised System (HS) or Standard

Figure 2.2: Global Exports in Herbal Plants and Extract



Source: RIS based on ComTrade, WITS, 2021

International Trade Classification (SITC) codes and therefore, all five segments of the industry cannot be estimated accurately in a transparent manner. In this industry, the MAPs segments can be estimated accurately and to a large extent for the plant extracts segment of the industry. The global trade in the Medicinal and Aromatic Plants (MAPs) (or Herbal Plants) and plant extract could be a reflection on the size of the industry. According to the present study, the global trade in MAPs declined from US\$ 3.4 billion to US\$ 3.1 billion between 2014 and 2020, as shown in Figure 2.2. This is in line with the forecasted growth rate of global herbal medicine and supplements industry by various reports mentioned above. China and India are the two major exporters of MAPs across the globe, accounting for around 29.9 and 11.2 per cent of total exported value of MAPs in 2020. While China registered a CAGR of -4.9 per cent in the export of MAPs for 2014-20, India recorded a CAGR of 6.45 per cent. USA and Germany are the two major importers of MAPs followed by Japan and Hong Kong.

Monopolistic tendencies evolving in the global herbal trade

There has been a growing tendency of monopolistic suppliers in the global herbal medicinal industry. Similarly, in the buyer's market monopsony trend is existing because of high concentration of a limited number of global buyers. Such tendencies are impending the global flows of trade and also predictability of herbal commodity prices over a period of time. This has been the cause of market failure in the world economy despite prevalence of

buoyancy in the domestic market for the herbal medicinal industry. China, India and Egypt have reported a net positive trade balance in their exports of MAPs while USA, Japan, Hong Kong, and Germany are major net importers. The existing trade pattern demonstrates a clear difference between trade structure of India and China with respect to MAPs sector. Shorter trade distances reveal that exports of China are mainly concentrated in nearby countries, like Japan, Hong Kong, South Korea, etc. whereas The average trade distance for India is high, indicating high trade with distant countries, like the US and Germany, than the partners in the immediate neighbour. It may also be noted that the market of MAPs is competitive than plant extracts. The global trade pattern reveals that major net exporters and importers procure their products from diverse range of countries.

Emergence of a strong value chain system getting reinforced in the world market

The trade analysis shows that net positive demand from developed countries which could be the major driver of herbal medicines and supplements in the world market. As noted before, the US alone accounts for more than one-fourth of herbal supplements market. It may be noted that the demand from other developed nations of the Western Europe is also on the rise. Despite high growth in exports of MAPs from India, the country must focus on shifting exports from raw materials to value added goods such as Plant Extracts and final consumer products. A detailed India specific analysis of trade in MAPs and Traditional Medicine is presented in section 5.

Section: 3

Policy, Performance and Prospects in AYUSH Sector in States

Enabling policy and incentives by states are contributing to increased production and sourcing of raw materials

There is a strong enabling environment for AYUSH in most states of India. The historical prevalence of usage and production of AYUSH medicaments, particularly Ayurveda, Siddha and Unani, have provided a ready base for manufacturing. Location in agro-climatic zones, especially in the biodiversity hotspots regions of Himalayas in the northern and eastern regions and Western Ghats in western India have offered strategic advantage to several states with ready supply of raw materials. Subsequent policy push has created the much required transition to modern organised product manufacturing in line with quality standards as per international market requirements. Today, supported by the Government of India, several states have industrial/investment policies along with industrial hubs for AYUSH product manufacturing. State policies for promotion of raw material cultivation further facilitate value chain integration in the sector. At the same time, some states have capitalised their advantage in AYUSH service sector, as wellness destinations, to promote product manufacturing. This section maps location of manufacturing industries in states/union

territories. It also analyses competitiveness of different states in manufacturing facilitated by industrial/AYUSH policy initiatives/industrial hubs/clusters on the one hand and strategic positioning of raw material and service sector on the other.

3.1 Performance of Different AYUSH Systems

AYUSH manufacturing is spread all over the country with some states showing rapid strides. In general, different states are catching up fast in terms of formulating policies and identifying the niche segment. Although number of firms and turnover vary across states, there is no direct correlation between these two. In other words, it implies that manufacturing of AYUSH products need to be seen holistically. Himachal Pradesh has the lowest number of units among the top states and still has the second highest turnover. This may be attributed to the large scale of operating units in Himachal Pradesh. Further, while all states offer tremendous opportunities for investments in AYUSH sector, even states having relatively low turnover (Rs. 100 crore or less) such as Andhra Pradesh, Odisha, Goa, Sikkim and Chhattisgarh and northeastern states have strong investment potential in several components of the manufacturing value chain (Figure 3.1).

Both MSMEs and large enterprises in Ayurveda maintain a steady presence across states

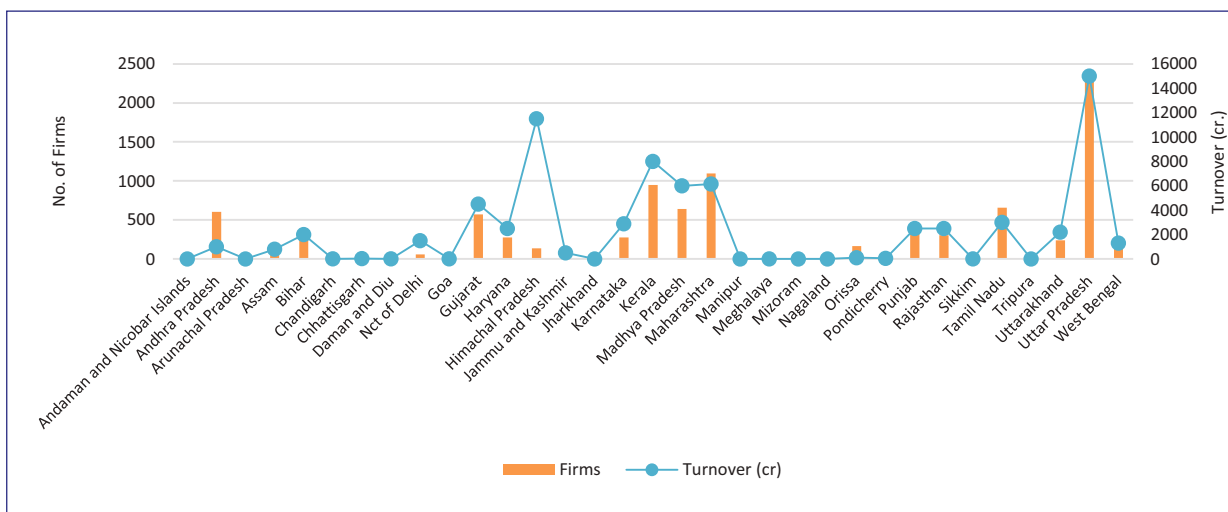
As shown in Figure 3.2 Ayurveda firms are located in all different regions of India. UP leads with 1,974 Ayurveda manufacturing units including many MSMEs as well as three major enterprises Dabur (Sahibabad); Maharshi Ayurveda (Noida); and Baidyanath (Allahabad). In contrast, Himachal Pradesh has the lowest number of units with second highest turnover. This may be attributed to the scale of operating units. About 300 units are in operation, and 125 companies contribute an estimated INR 10,400 Crore¹. Dabur (Baddi); Emami(Baddi); Charak(Baddi); and Tirupathi (Kala-Amb) are the major manufacturers in HP. In Karnataka, Himalaya Drug Co., (Bengaluru); Sri Sri Tattva (Bengaluru); and Natural Remedies (Bengaluru) are the major firms contributing more than 80 percent of the estimated INR. 2,885 Crore turnover of the state². In Madhya Pradesh Dabur India Ltd. with three units (Katni, Maxi, Pitampura) and Vindhya Herbals are two major enterprises operating in MP. In Kerala, Arya Vaidya Shala (Kottakkal); Vaidyaratnam (Thrissur); Kerala Ayurveda; KAPL; Nagarjuna

Herbal Concentrates ; Dhatri Herbals; Sita Rama Ayurveda (Thrissur); Pankaja Kasturi; and Oushadhi (Thrissur) are major enterprises. Amritanjan Pvt. Ltd., Medimix, and Arya Vaidya Pharmacy are Ayurveda manufacturers contributing to Tamil Nadu’s Ayurveda industry turnover.

Besides Tamil Nadu, Sidhha manufacturing units are coming up in Kerala and other states as well paving way for large adoption and practice of Sidhha system of medicine in the country

Social and historical prevalence of a healthcare system also determine the dominance of a particular system in a state and one such example is Siddha manufacturing in Tamila Nadu (Ritupriya, 2013). Siddha system of medicine, one of the oldest systems of medicine, has been practiced largely in the Tamil speaking part of India and abroad. Owing to tradition of Siddha in Tamil Nadu, the state has largest number of manufacturing units and also the largest turnover (Figure 3.3). Similar to Ayurveda, Siddha drug manufacturing is regulated under the legal provisions related to GMP under Drugs and Cosmetics Rules 1945,

Figure 3.1: State-Wise Distribution of AYUSH Firms in India



Source: RIS based on data from FAAMS.

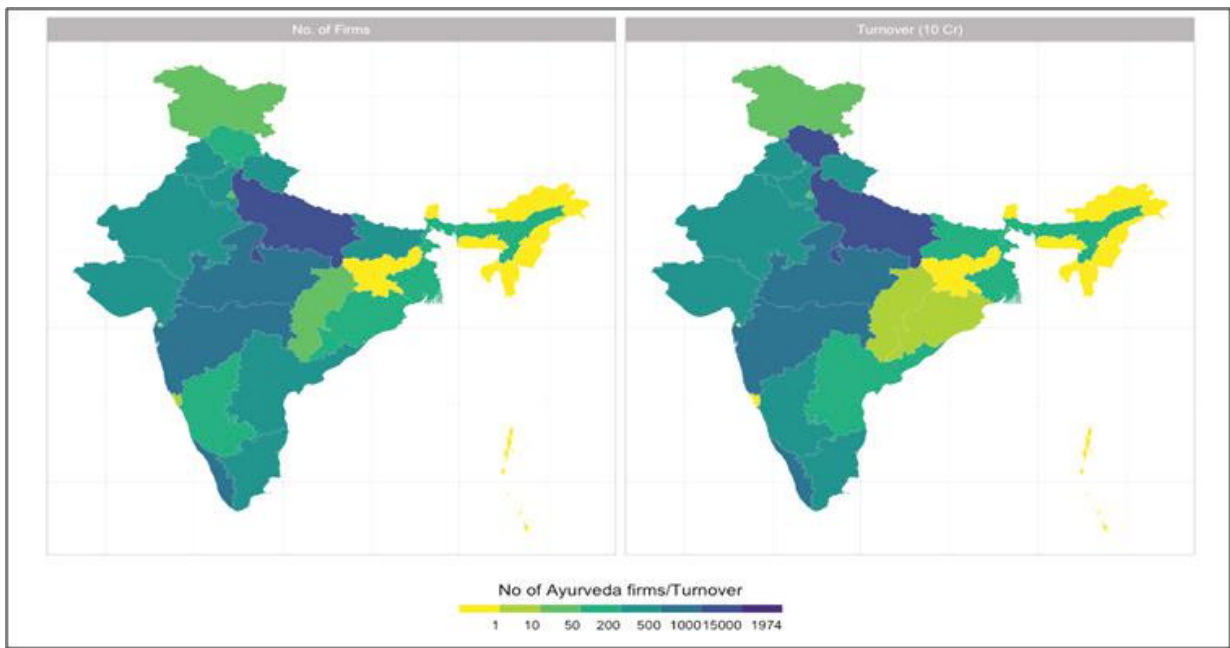
particularly Rule 151 to 160 and Schedule T. However, unlike other Ayush drugs, most of the Siddha medicines come under generic category. Drugs used in Siddha can be classified into three groups: herbal product, inorganic substances, and animal products. All these medicines are manufactured following the principles prescribed in the classical texts which are specified in the first schedule of the Drugs and Cosmetic Act. PSU Tamil Nadu Medical Plant Farms & Herbal Medicine Corporation Limited (TAMPCOL) and the cooperative sector enterprise, the Indian Medical Practitioners Co-operative Pharmacy and Stores Limited (IMPCOPS), together contribute 40 per cent to total turnover of Siddha in the state (Kunnathoor, 2017). These two companies manufacture all AYUSH medicinal products and supply to the government health centres and deal with private marketing agencies. Besides Tamil Nadu, Kerala has also emerged as Siddha manufacturing destination with as

many as 26 new firms (650 per cent increase) between 2011 and 2021.

Unani system of medicine needs greater awareness and incentives for wider use across the country

The Unani system of medicine with its recognized practitioners, hospitals and educational and research institutions have become an integral part of the national health care delivery system of India. Having enjoyed the patronage of eminent Unani physicians in UP and Delhi manufacturing of Unani medicines has thrived in UP and Delhi along with some other states like Bihar and Telengana. As seen in Figure 3.4, the turnover of the sector is the highest in Delhi, though the number of Unani manufacturing units is small. This is possibly owing to large companies like Hamdard Laboratories with a turnover of more than Rs. 700 Crore. Over the last decade, between 2011 and 2021 the number of Unani firms have decreased from 424 to 414.

Figure 3.2: State Wise Distribution of Ayurveda firms and Turnover



Source: RIS based on data from FAAMS.

This may be attributed to the consolidation by few leading firms. Along with Ayurveda and Siddha, Unani manufacturing is regulated under the legal provisions related to GMP under Drugs and Cosmetics Rules 1945, particularly Rule 151 to 160 and Schedule T. Along with the government of India different states can promote awareness about this important system of medicine and facilitate investment in critical segments of manufacturing.

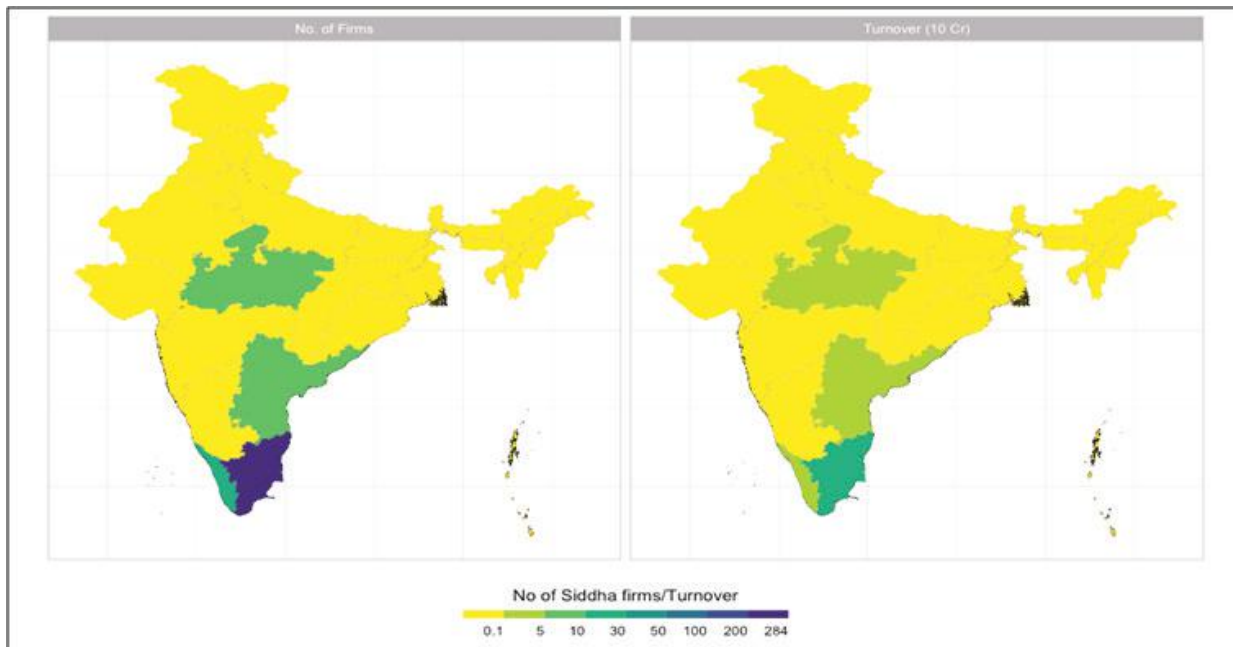
Rise in production and consumption of Homeopathy in India and at the global level necessitate concerted policy action for its development and popularization for ordinary use

Having originated in Germany, Homeopathy has grown substantially both in consumption and production in India. Distribution and turnover of Homeopathy manufacturing broadly mirror Ayurveda manufacturing (Figure 3.5). Over the last decade (2011-2021) this sector has seen a significant growth (170 per cent) in manufacturing units. States of Uttar Pradesh, Bihar, Gujarat, Karnataka and

Maharashtra have witnessed a growth of homeopathy manufacturing ranging from 117 to 1,012 percent over a period of 10 years. The homeopathy drug manufacturing industry is mostly concentrated in Maharashtra with a total output by homeopathic firms at Rs. 332.6 crores in 2017-18.

It can be inferred that the growth in homeopathy has been a result of market response to this system. Globally homeopathy product market is growing by 14 per cent³. Composition of raw materials and consequent manufacturing of homeopathy is distinct from Ayurveda, Siddha and Unani. The raw materials of homeopathic drugs can be classified under the following: 60 percent is of plant origin 25 percent is of chemical or mineral origin 10 percent is of animal origin 5 percent from bacteria, micro-organism⁴. Standards of Homoeopathic medicines to be complied for manufacture, for sale, distribution or import are defined under Second Schedule of the Drugs and Cosmetics Act 1940. Most of well recognized and major Homeopathic

Figure 3.3: State Wise Distribution of Siddha firms and Turnover



Source: RIS based on data from FAAMS.

medicine producers have complied with the GMP requirements (Sarafinowska et al, 2014) though with a significant growth in the sector, addressing quality control, impurity and contamination issues needs to be addressed across all manufacturing units to prevent serious public health risk .

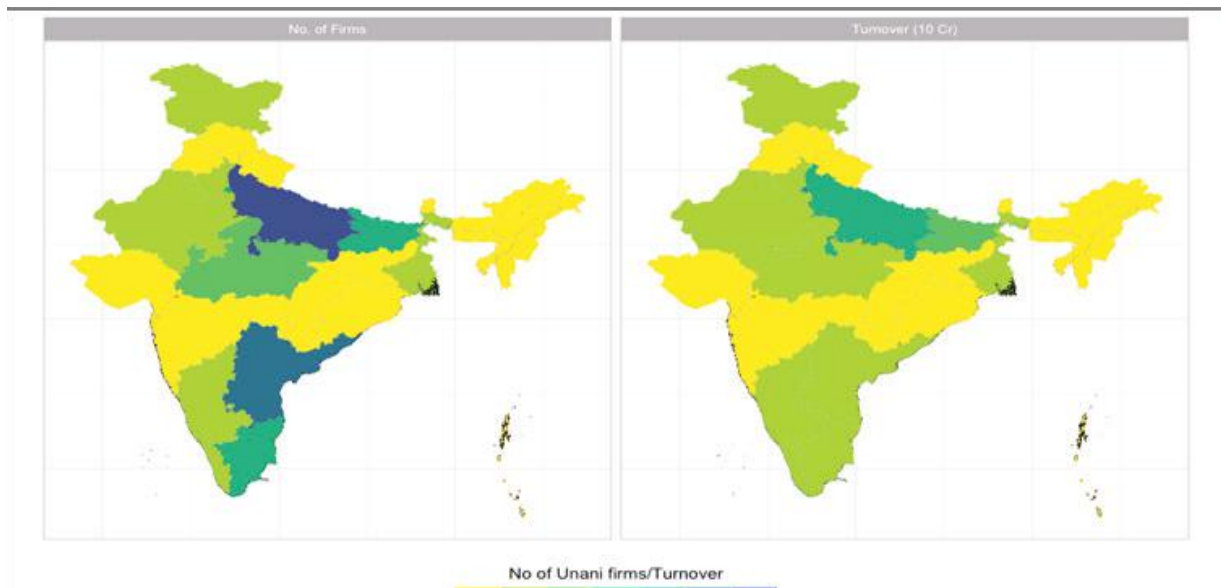
States with high output of AYUSH drug/ pharmaceuticals are also leaders in other allied sectors

As per ASI, in 2017-18, Uttarakhand and Karnataka with an output of Rs. 3891.6 Crores and Rs. 3474 crore respectively lead in Ayurveda/Unani drug manufacturing output. Gujarat has also shown substantial growth in recent years. Uttar Pradesh, Kerala and Himachal Pradesh are also among the leading manufacturers of Ayurveda/Unani drugs. Kerala being the hub of Ayurveda drug manufacturing with 138 units had the highest number drug manufacturing units followed by Gujarat at 125. Gujarat’s growth in Ayurveda drug manufacturing is parallel to its growth in modern pharmaceutical manufacturing.

AYUSH being primarily a pharmaceutical industry, drug manufacturing forms the core. It gives allied sectors ranging from proprietary and nutraceuticals to cosmetics, the associated marketing and branding advantage. In the long run, states’ drug manufacturing output is also likely to create favorable ecosystem for AYUSH healthcare and associated wellness services.

Figure 3.6 highlights the employment-output ratio of firms with a lower ratio demonstrating higher productivity. As can be seen, labour productivity of Ayurveda/Unani drug manufacturing is high in states with high output and turnover. States like Assam with relatively low total output (owing to limited number of manufacturing units) but high labour output offer prospects for investment not explored yet. For states like Orissa, the ratio improved significantly between 2012-13 and 2017-18. Overall, increase in labour productivity in the sector has been seen in all major states. The sector employed around 36,000 workers in 2017-18 with Uttar Pradesh (UP) employing the highest number of workers at around 3700. Labour productivity being an

Figure 3.4: State Wise Distribution of Unani Firms and Turnover



Source: RIS based on data from FAAMS.

important economic indicator, closely linked to economic growth and competitiveness of a sector/state, its growth also highlights the possibility of efficient usage of physical capital, human capital and technology. It can be inferred that leading states have invested in the required capital and technological support for the sector.

3.2 Policies and Initiatives

States are implementing industrial policies and incentives for improving ease of doing business in AYUSH sector in the form of subsidies, exemptions and land allotment

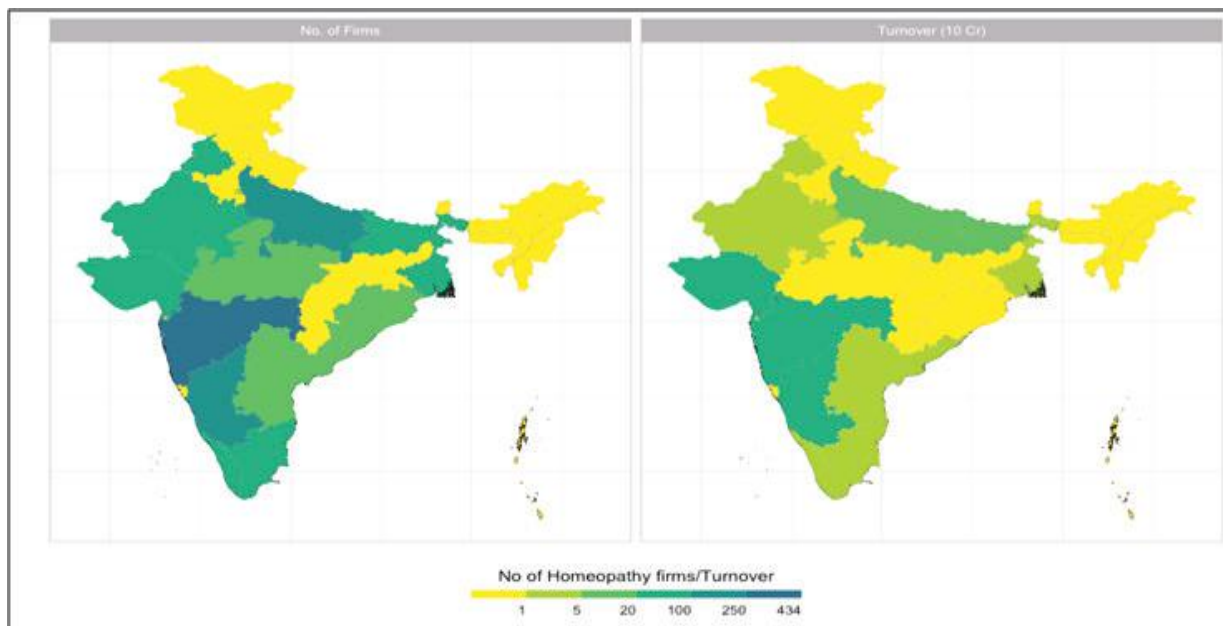
Ease of investment is a key driver of growth. Leading AYUSH manufacturing states have successfully completed the “Ease of Doing Business” (EoDB) reforms⁵. These include Uttar Pradesh, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Uttarakhand, Gujarat Punjab, Rajasthan, Tamil Nadu and Telangana. With investment facilitation through industrial/ investment policies and location of industrial

hubs, states have created a strong ecosystem for product manufacturing. Several states also enjoy the strategic advantage of location of allied industries of AYUSH services and raw materials.

Central government schemes for facilitating entrepreneurship exist under the Ministry of MSME. Quality control measures such as Good Manufacturing Practice (GMP) guidelines and quality certification schemes have been introduced by the Ministry of AYUSH to instill greater market confidence in products. However, given that health is a State Subject⁶, state practices in regulation, management and administration of products and services greatly facilitate growth of the sector. Promotion of the sector through AYUSH-specific industrial/ investment policies and manufacturing hubs in states significantly aid growth of manufacturing.

Several states have industrial policies to facilitate AYUSH/pharmaceutical investments with varied incentives including subsidies in capital, R&D, clinical trial and quality

Figure 3.5: State Wise Distribution of Homeopathy firms and Turnover



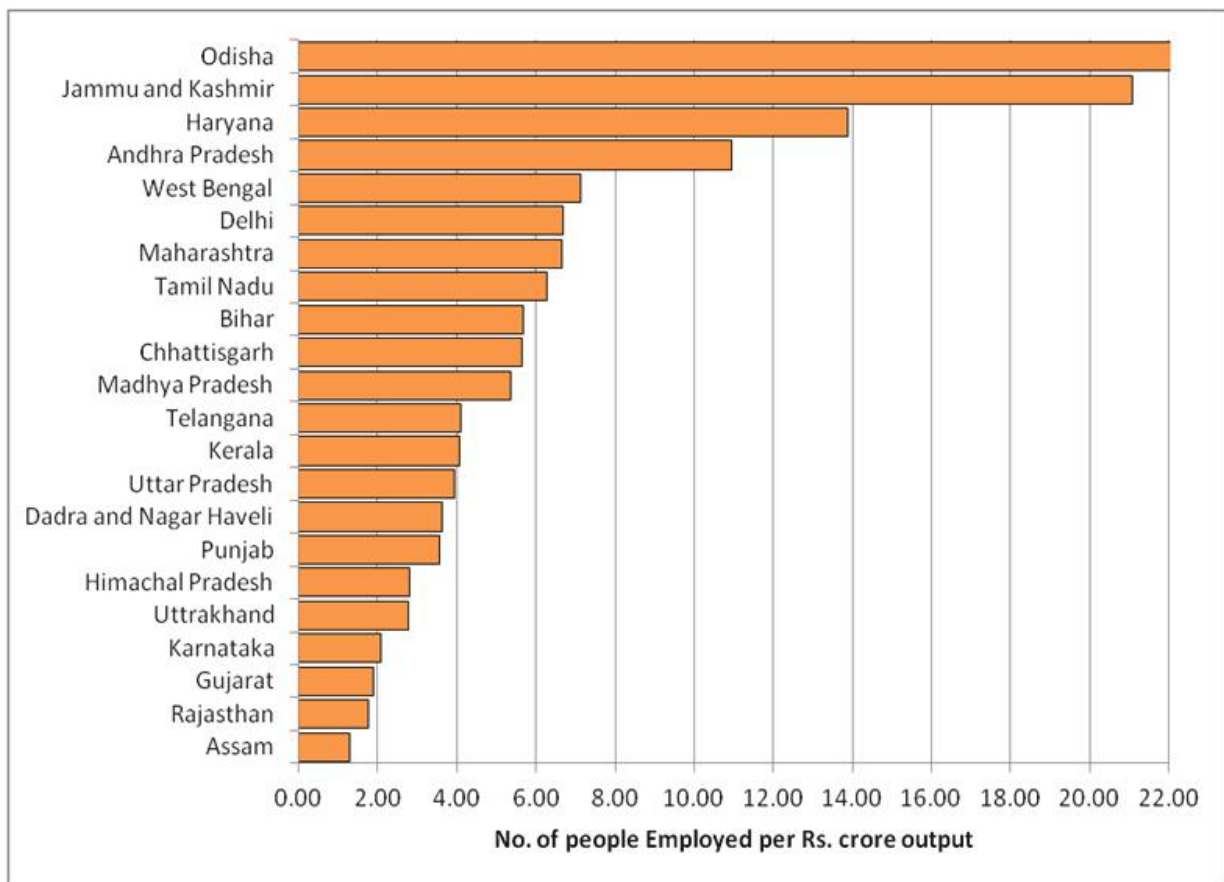
Source: RIS based on data from FAAMS.

certification and preferential land allotment. While Uttar Pradesh Pharmaceutical Industrial Policy 2018 (Government of Uttar Pradesh, 2018) & Industrial Investment and Employment promotion Policy (IIEPP) 2017 offers subsidy up to 75 per cent for quality certification and clinical trials, SGST reimbursement, stamp duty exemption, electricity duty and mandi fee exemption, Himachal Pradesh Industrial Investment Policy 2019 offers capital infra subsidy up to 40 percent for Herbal Park. Kerala AYUSH Health Policy 2016 (Government of Kerala, 2016) offers 100 percent reimbursement of registration and stamp duty for all AYUSH infrastructure projects while Uttarkhand AYUSH Policy 2018 (this includes utilization of MSME Policy 2015, Mega Investment

and Industrial Policy 2015 for Ayurvedic manufacturing industries) has Assistance of 60 percent of the Project Cost up to a maximum of Rs. 15 crores for AYUSH clusters. J&K and Chattisgarh and Karnataka are the latest states to bring out industrial policies pertaining to AYUSH (Annexure 1)

In some states like Gujarat, despite absence of policies specifically aimed at AYUSH, growth in Ayurveda drug manufacturing has been aided by policy promotion of medical industry (drugs, medical devices, services). Aggressive industry policy promotion for manufacturing industries in general and ease of business environment have given necessary infrastructure to AYUSH sector to ride the on business reforms in Gujarat. In the

Figure 3.6: Employment/Output Ratio of Ayurveda/Unani Firms by States 2017-18



Source: Annual Survey of Industries 2017-18. (Note: For easy comparison the figure is capped at 22.00, although, the Employment Output ratio of Orissa stood at 48.83)

(CFCs) like testing facilities, R&D centres, effluent treatment plants, logistics and training centres in pharma clusters are likely to benefit the AYUSH industry as much as the pharma industry. Location of manufacturing units in industrial hubs also highlights the growing maturity of the sector.

Recently the Karnal AYUSH cluster has been formed under the Centre's MSME flagship scheme. It includes a common facility centre (CFC) with herbal extraction plant, R&D facility and quality control labs for the 200 MSME units in the cluster⁷.

Medicinal plants industry is the crucial back-end linkage for product manufacturing. Both private sector and states should be encouraged for investing in medicinal plant cultivation

The value chain of medicinal plants beginning with the raw materials, i.e., plant resources, their storage and processing, assumes particular

importance in the manufacturing process. Raw material availability is a key factor determining location of manufacturing units. India is one of 17 mega biodiversity countries contributing to 7 percent of world biodiversity. 15 Agro-climatic zones with more than 7,000 plants species have known usage as medicinal plants in India. All agro-climatic zones of India contribute to medicinal plants requirement with its area-specific species. The Himalayas are endowed with diverse medicinal flora. Likewise, the Western Ghats, one of the mega-biodiversity hotspots, form another major source of supply. The tropical forests of Vindhyas, Chhotanagpur plateau and Aravalis also contribute substantially to the resource base for the AYUSH industry. States with substantial biodiversity/forests like Uttarakhand, Himachal Pradesh have the advantage of access to raw materials through collection practices. Other states like Madhya Pradesh in addition to their

Box 3.1: Kerala drug manufacturing industry: Strengthened by a combination of strong traditions, institutional linkage and wellness tourism sector

In the Ayurveda industry, Kerala occupies a major place. With the second highest number of Ayurveda firms, its USP of organized manufacturing has been ably supported by an enabling ecosystem. Thrissur with the highest number manufacturing units demonstrates this ecosystem with well established medicinal plant market and raw material delivery system which has led to a much nuanced development of the sector. While most firms in Thrissur trace back their lineage to familial practice of traditional Ayurveda, in the late 19th century, the Ayurvedic system in the state underwent multiple changes to suit the present global market. The initiatives to institutionalize the system were led by local Ayurveda organizations such as the Kerala Ayurveda Samajam (Payyampallimana et al, 2010) and leading manufacturers such as Arya Vaidya Sala (AVP). Following independence, state support for Ayurveda's industrialization explains partly, if not fully the favourable condition of Ayurveda in Kerala. Against this backdrop, the industry has adapted well to changing market demands with innovations in enhancing potency, bulk drug production and palatability. Ownership patterns of leading manufacturing firms today display wide variation where AVP is a Private Trust, Oushadhi is a state enterprise and Nagarjuna Herbals is a Private company. Along with a thriving Ayurveda public health system, the promotion of Ayurveda in State health tourism since 1994 has further added to the manufacturing sector's strength. It has emerged as the back end linkage to the wellness tourism supported by state institutions like Kerala Tourism Development Corporation (KTDC) and KINFRA. Entry of big players like HUL in the wellness space in Kerala has been capitalized by local manufacturing giants like AVP with collaborations and tie-ups as early as 2002⁹.

own forest resources secure raw materials from neighboring forest-rich states like Chhattisgarh. Currently, majority of MAP supply is sourced from forests (72 per cent of the 242 species) (Ved and Goraya, 2017)

However, collection practices as sources of raw materials have long been cited as unsustainable for the growing industry. For example, as pointed by Thakur and Noel (2021), despite being located in a forest rich state, the growing Ayurveda industry in Solan is being constrained, among others by a scarcity of raw material. Studies on other leading states such as

Kerala, (Harilal, 2009) also point to the challenge of raw material availability.

Cultivation of MAPs in comparison is being acknowledged as a sunrise sector owing to its potential to raise farm income, provide livelihood security, earn foreign exchange through export and ensure sustained supply of raw material to the industry. Medicinal plant cultivation is being promoted under National AYUSH Mission with the efforts of NMPB as these exists a large scope for growth in this sector. There have been efforts to scale up cultivation of medicinal plants across states.

Box 3.2: Karnataka : An Emerging Investment Destination

Over the last few years AYUSH sector in Karnataka has grown tremendously. The state has a well-built physical, social and industrial infrastructure base. Along with its key industries of IT, automotive, aerospace and agri-food processing, Karnataka is emerging as a favoured wellness destination. The presence of AYUSH health infrastructure including both public and private hospitals, along with educational institutions has created the ecosystem for Ayurveda manufacturing. The state has 213 AYUSH hospitals with 10,195 beds and 48,326 practitioners. Private enterprises both in products and services segments include well-known brands of AYURVAID hospitals and Sri Sri Tattva Ayurveda products. The state AYUSH department plays an active role in quality control of manufacturing units. Some important measures towards this end include :

- GMP compliance of all 209 manufacturing units in Karnataka 10 designated drugs inspectors for ASU drugs under Sec 33G of D&C Act 1940
- A working government drug testing lab
- Notified Government analyst under Sec33F for ASU Technical Expert committee is constituted under Rule154 of D&C Rules 1945 to scrutinise the ASU formulations. This Committee meets once in a month, scrutinises formulations in the presence of representatives of manufacturing units to maintain transparency in administration
- Inspection of manufacturing units by Drug inspectors units bi-annually. This includes drawing Random samples and subjecting them for analysis. Actions are initiated in case of NSQ (not of standard) drugs.

New Initiatives to ensure ease of business has been undertaken. This includes the following:

- Digitisation of drugs licence related documents are being undertaken and planning for online Approvals of drugs licenses and GMP certificates.
- Online approvals of Performance certificates and Non conviction certificates under Karnataka
- Guarantee of Services to Citizens Act 2011 in time bound manner.

Source: RIS based on data from various sources.

As seen in Figure 3.5 states of UP, Rajasthan, Madhya Pradesh, Karnataka, Chhattisgarh and Tamil Nadu are the significant contributors to medicinal plant cultivated area as well as volume. Supported by National AYUSH Mission (NAM) cultivation has also been recorded in states of Andhra Pradesh (AP), Himachal Pradesh (HP), Kerala, Nagaland, Telangana, Uttarakhand (Ministry of AYUSH, 2018). The number of farmers who have been motivated to adopt medicinal plant cultivation has increased along with corresponding increase in cropped area. In 2018-19 almost 657,000 hectares was under cultivation of medicinal plants. Commercial success of Ashwagandha and Pippalaoumodi cultivation in Andhra Pradesh, Shankhapushpi cultivation in Rajasthan, Senna cultivation in Tamil Nadu, TejPatta cultivation in Uttarakhand and Aloe vera in Telangana have been documented (James and Pathak, 2019).

Financial allocation to states for cultivation/post harvest management is being supported by NMPB. It is a demand driven initiative

Several state agricultural departments have been active in maximising utilisation of NMPB's financial support for medicinal plant cultivation. Till date 56305 hectares have been cultivated under this programme. States of Uttar Pradesh, Madhya Pradesh and Andhra Pradesh have the largest area cultivated. Together, these states have accounted for nearly 51 percent of cultivated area and 40 per cent of total financial assistance. Rajasthan, Karnataka and Kerala have also been leading beneficiaries. It can be inferred that states are increasingly acknowledging the value of crop diversification and financial viability of the medicinal plant cultivation.

Contract farming, farming cooperatives and mandis are new initiatives facilitated by state and private sector initiatives for raw material cultivation

Many large Ayurveda enterprises like Dabur,

Zandu, Himalaya Drugs, AVS, Kottakkal, Shree Dhootpapeshwar, etc., undertake contract farming of medicinal plants to meet their demand (James and Pathak, 2019). Other pharmaceutical/FMCG/AYUSH enterprises which specialise in production of a few speciality drugs/chemicals from plant sources like Cipla, Natural Remedies, Samilabs, Core Health Care, Cadila Health Care, Bio-Ved Pharma, etc., are also involved in contractual cultivation to supplement their requirements (James and Pathak, 2019). Most small farmers supply MAPs to the industrial units under the contract farming model which often includes buy-back arrangements. At the same time, states such as Kerala have tried to address the supply gap with targeted programmes through creation of farming cooperatives on medicinal plant farming targeted to the needs of manufacturing units.

Medicinal plant markets/mandis play an important role in the supply chain of the industry. The major centres, located at the heads of the routes taken by the medicinal plants, are big cities including the four metros. Major exports originate from Delhi, Mumbai, Chennai and Tuticorin. Markets like Raksal, Sidhpur, Unjha, Thrissur, Shivpuri, Dhamtari, Neemuch, Katni, Virudhunagar, Tuticorin, Tanakpur and Siliguri are specifically medicinal plants markets. These centres and markets/mandis are located in major AYUSH manufacturing states. Efficient functioning of these markets could facilitate growth of manufacturing.

Market places create the linkage for post harvest management of medicinal plants. States should be encouraged to create infrastructure for organised sale and purchase of raw materials.

Given that quality and efficacy of herbal drugs are highly dependent on efficient post harvest management of medicinal plants, NMPB also allocates financial assistance to states for the same. Uttar Pradesh and Madhya Pradesh have the largest area for post harvest management under the scheme and corresponding financial

allocation. Comparatively large scale of cultivation and collection practices in the two states ably assisted by location of large organised mandis such as Lucknow, Kanpur, Neemuch (Ved and Goraya, 2017) account for the dominance of the two states. Interestingly, states like West Bengal and Assam though with limited area under cultivation have comparatively large areas undertaking post harvest management under the NMPB scheme. This could be possibly attributed to the location of medicinal plant markets/mandis in these states. Owing to the absence of organised market places in neighbouring regions, raw plants flow to these states for aggregation and further processing. As yet, Kolkata is the only major medicinal plant market in the north east region, while Assam has smaller markets in Kokrajhar, Dibrugarh and Guwahati (Subrat et al, 2002) . Creation of organised mandis in other states of NE would greatly facilitate post harvest processing and other industry linkages in the sector.

The Post harvest sector can be seen within the context of both functional and operational mechanisms (Mrema and Rolle, 2002). Economic and efficient management through post harvest management is key to increasing productivity, reducing losses in the medicinal plant sector. It requires a focussed intervention both as a sector and as a value chain linkage between harvest and manufacturing units.

Active Non-profit agencies in states aiding farmers/collectors in states create offer handholding to farmers

Local NGOs are increasingly facilitating contract farming, further strengthening the supply chain of medicinal plants. Human India (Uttarakhand), AGAS (Himachal Pradesh), Kovel Foundation (AP & Telangana) GMCL (Tamil Nadu) Asha Gramodyog (UP) and CARE (Gujarat) are some examples. NGOs like Baitarani (Odisha) GMCL(MP) have also been facilitating sustainable MAP collection for industry. Prices in such cases are determined

on the basis of market rates. The elimination of middle men ensures that farmers can claim 100 per cent of raw material cost under this arrangement.

Wellness destination states are optimizing their status to promote product manufacturing

Medical value travel or tourism is a growing sector in India. In mid-2020, India's medical tourism sector with estimated worth of US\$ 5 to 6 billion was expected to grow to US\$13 billion⁸. India's attractiveness as medical tourism destination is strongly being supported by its credibility in Indian systems of medicine as well as increased global demand for wellness services like Yoga and meditation. Increasingly, the focus on strong branding of alternative medicine and rejuvenation therapies along with an emphasis on wellness and prevention is drawing patients to India from across the globe. Wellness tourism that builds on India's strengths in Ayurveda and Yoga, in particular, is a fast-growing segment within India's MVT sector.

In 2017, India ranked seventh in the top 20 wellness tourism markets globally and third in the top 10 wellness tourism markets in Asia-Pacific (NITI Ayog, 2021). India's wellness market, estimated at Rs. 85,000 crore was expected to grow by CAGR of 12 per cent between 2015 and 2020 (James and Bhatnagar, 2019). Several major players like Apollo and the Manipal Group are setting up wellness centres, with traditional healthcare remedies as a key focus of their offerings. Many hotels/resorts in the country, especially in the southern States, are establishing Ayurveda Centres. Leading tour operators have also included Ayurveda in their brochures. Kerala, Uttarakhand, Himachal Pradesh also lead as wellness destinations, while states like Karnataka have seen a growth in the last few years. These states have capitalized on their status as wellness destinations to create AYUSH manufacturing as a value chain component to feed the service industry.

3.3 Investment Opportunities

Growth in global demand for herbal and traditional medicine products has created a strong investment opportunity in different states of India in all product segments of the value chain

There are investment opportunities in several parts of the product value chain. This includes cultivation of plants, processing and manufacturing. For states, infrastructure development in the form of industrial hubs, modernisation of medicinal plant market places, cultivation and contract farming promotion, and enabling AYUSH service sector development are key imperatives for growth of AYUSH manufacturing. States like Uttar Pradesh, Himachal Pradesh, Kerala, Madhya Pradesh and Maharashtra have clearly emerged as key manufacturing states aided by a combination of investment policies, industrial hubs, raw material supply and service sector. In addition, states like Uttarakhand, Karnataka, Gujarat and Rajasthan are emerging as new destinations with competitiveness owing to growth of allied industries like medical plants and AYUSH services. The potential of states showing limited presence of AYUSH manufacturing is yet to be explored fully. Orissa, Chhattisgarh, Jharkhand and North-Eastern states are some other regions with large percentage of forest cover though have a limited presence of manufacturing. Several policy recommendations for north-eastern states have already acknowledged the strategic advantage of their rich biodiversity.

Synergy in value chain identified for AYUSH specific strategy can be maximised by the presence of medicinal plant sector in these states. The National AYUSH Mission (NAM) is the key Central Scheme responsible for MAP cultivation promotion. Resource allocations for medicinal plants in north-eastern state and hill states of Uttarakhand and Himachal Pradesh

has been in the 90:10 ratio, while it is 60:40 between centre and other states. Subsidies under the NAM have been 75 per cent, 50 per cent and 30 per cent as per the listed priority of species. These incentives can be utilised by state governments to encourage MAP cultivation. Successive studies have demonstrated that MAP cultivation is also a win-win strategy for generating high income for farmers as well as the AYUSH manufacturing industry.

Overall, for investors there is a strong scope for investment in AYUSH manufacturing in several states. States in India have been proactive on two fronts: industrial policies on the one hand and enforcement of quality and standard subscription on the other creating an enabling environment for the industry. In states where AYUSH industry operates in a relatively small scale, the above-mentioned factors can be considered for creating a future road map. A case study of Karnataka is presented as an example of potential investment opportunities in the country.

Endnotes

- ¹ Estimation by FAAMS
- ² KADMA confirms that between 250 small players, about INR. 300 Cr turnover is distributed
- ³ <https://www.transparencymarketresearch.com/homeopathy-product-market.html>
- ⁴ http://14.143.90.243/dsir/sites/default/files/2019-10/ISM_H_Intro.pdf
- ⁵ <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1698600>
- ⁶ <https://www.mea.gov.in/Images/pdf1/S7.pdf>
- ⁷ Press Release , Haryana Chief Minister's Office ,3rd March 2021 <https://www.haryanacmoffice.gov.in/03-march-2021-0>
- ⁸ Healthcare. Invest India. <https://www.investindia.gov.in/sector/healthcare>
- ⁹ HLL AVP Tie Up for Ayurvedic Products , Times of India, 8 June, 2002

Section: 4

Performance and Opportunities in AYUSH Manufacturing Sector

Manufacturing is the largest component of the AYUSH sector. With 9,056 units AYUSH manufacturing is strategic in the sense that it also contributes significantly to employment. At present, the industry is dominated by private firms though public enterprises like IMPCL under the Ministry of AYUSH and several state enterprises also exist. Of late, new large private enterprises have entered this space owing to the growing demand for AYUSH and allied products. Chaturvedi (2014) notes that over the years TM industry has grown over two separate trajectories and increasingly a large number of actors have focused on proprietary products which have a huge market share. In Ayurveda alone, more than 30,000 proprietary and 1500 classical products are available in the market (Sharma et al, 2019). Given that more than 90 per cent formulations in Ayurveda, Siddha and Unani systems are plant based, manufacturing firms have a natural advantage as most of the raw materials in the form of medicinal plants are available in the country. Efforts to sustain supply through efficient collection and cultivation practices are also being made at the state and enterprise level. Further, policy focus on quality and standards enforcement has to a great extent ensured regulatory compliance by

majority of manufacturing firms.

Ayurveda occupies a major share of the manufacturing sector followed by Homeopathy, Unani and Siddha. Manufacturing units are spread across several states though there is wide variation in the number of units, turnover, and geographical distribution. Both Unani and Ayurveda formulations have the costliest raw materials and costly processing. The reason for low cost of production of Homoeopathy products is attributed to the low raw material and formulation costs.

AYUSH manufacturing units can be broadly categorised as organised though a small number of unorganised sectors also exist. The organised sector consists of both large and Micro Small and Medium enterprises (MSMEs). There are 9,056 licenced units manufacturing AYUSH products in India. Around 7,500 firms have a turnover of less than Rs. 1 crore. At least 1,000 of them are either non-functional or semi-functional. About 1,500 MSMEs fall under Rs. 1 to 5 crore turnover category. Small manufacturers produce a few medicines and operate in a small area. There are few small manufacturing units who cater to export markets only.

4.1 Performance of AYUSH Firms

Sales and income of AYUSH firms in India have increased steadily over the years suggesting brighter investment prospects irrespective of external sector uncertainty

Overall, AYUSH industry in the country exhibited robust performance in the recent years. This has been manifested in increase in sales, income and exports. For instance, total sales of 81 sample firms have tripled in a decade from Rs. 85.5 billion in 2010 to Rs. 285.4 billion in 2019. It has declined modestly in 2020 due to low economic activity in view of persistence of COVID19 pandemic. Figure 4.1 illustrate a clear trend in turnover of the industry during 2010-2020.

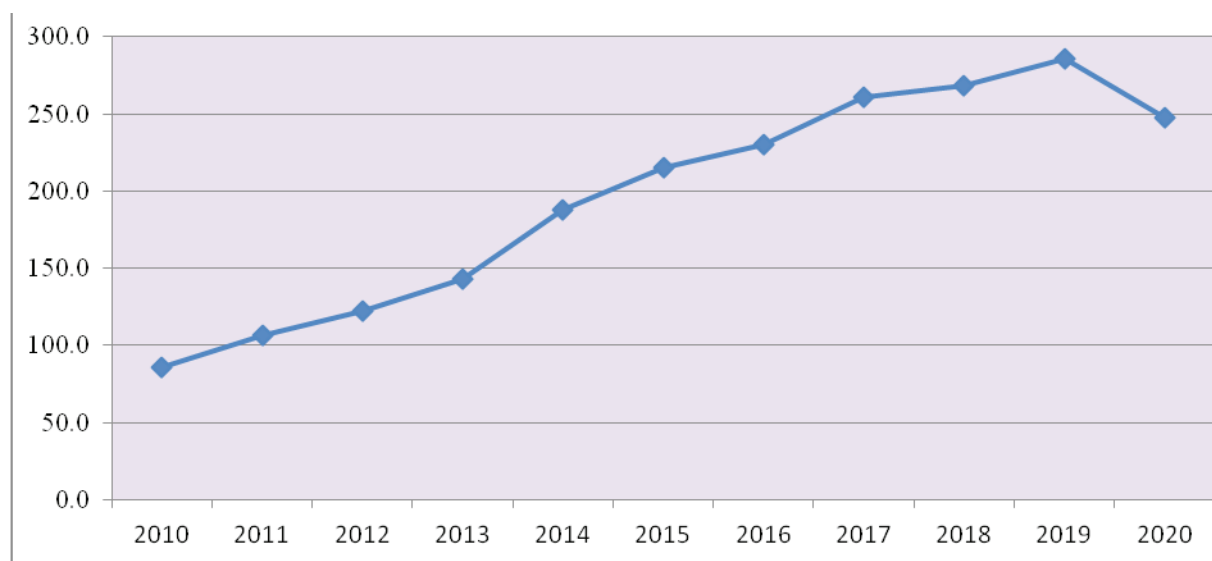
Stronger performance of the industry holds true for across different sizes of firms. For instance, during 2010-14, both sales and profits of the sample firms have grown by more than 20 per cent (21.7 per cent and 21.2 per cent respectively). Although growth in sales dipped to 7.3 per cent in the period 2015-19, profits grew by 16.4 per cent during the same period. Interestingly, profits registered dramatic

growth of 44.1 per cent for the firms in the category of 50 to 250 crore during 2010-14. Sales of firm in this category has also experienced phenomenal rise of 28.9 per cent. Firms with turnover between 5 and 50 crores have also displayed relatively strong performance in sales and profits (Table 4.1).

AYUSH firms have maintained encouraging trends in profits regardless of their size of operations indicating growing business confidence in the AYUSH sector

AUSH drug manufacturing companies, especially Ayurveda manufacturers have mostly been family-owned businesses. The origin of most of these companies can be traced back to a Vaidya with many such companies now being run by third generation owner-managers. There has however been a shift in the trend in the last decade with several new players entering the market. These include companies focused entirely or substantially on classical/proprietary AYUSH products, consumer/personal care FMCG companies which have AYUSH products as part of their wider product portfolio and pharmaceutical

Figure 4.1: Turnover of AYUSH Firms in India (Rs. Billion)



Source: RIS based on data from CMIE Prowess accessed on June 20, 2021.

Table 4.1: Sales and Profits of AYUSH Firms, 2010-19

Firm Size	No. of Firms	Sales			Profits		
		Value (2019) (Rs. Bn.)	Growth (2010-14) (%)	Growth (2015-19) (%)	Value (2019) (Rs. Bn.)	Growth (2010-14) (%)	Growth (2015-19) (%)
Less than 5	11	0.15	33.5	-2.6	-0.0001	-	-
5 to 50	27	5.1	18.9	0.2	0.3	10.2	148.3
50 to 250	20	20.7	28.9	6.8	1.5	44.1	8.7
More than 250	22	259.5	21.4	7.5	31.4	20.6	11.5
All	81	285.4	21.7	7.3	33.3	21.2	16.4

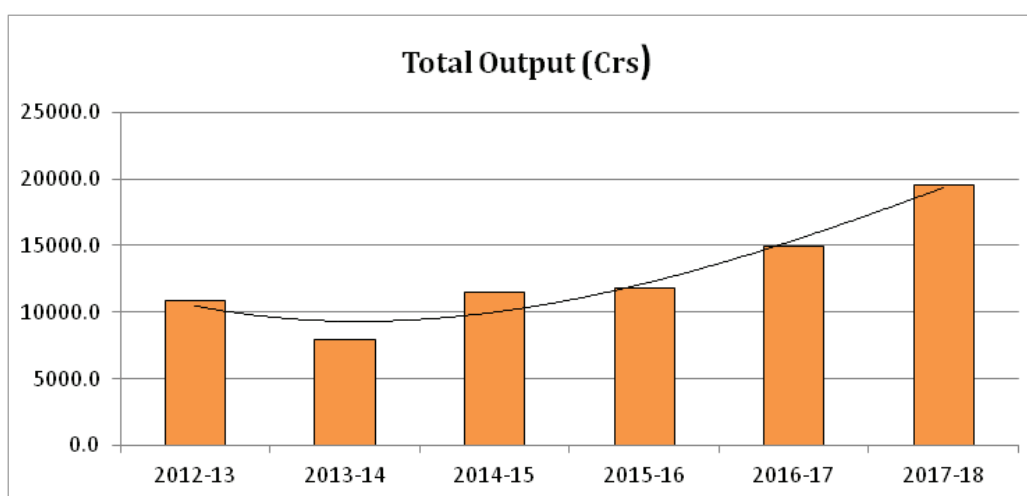
Source: RIS based on data from CMIE Prowess accessed on June 20, 2021.

Notes: For growth, compound annual growth rates are computed. Due to negative initial values for profits of 'less than 5' category firms, CAGR computations are avoided.

companies which have AYUSH as one of the business segments. All these three categories have different business strategies and area of focus would accordingly differ across categories. The product basket associated with AYUSH, as indicated in Section 2, includes cosmetics, nutraceuticals, extracts, apart from Ayurveda/Unani medicaments as described under NIC Code 21003.

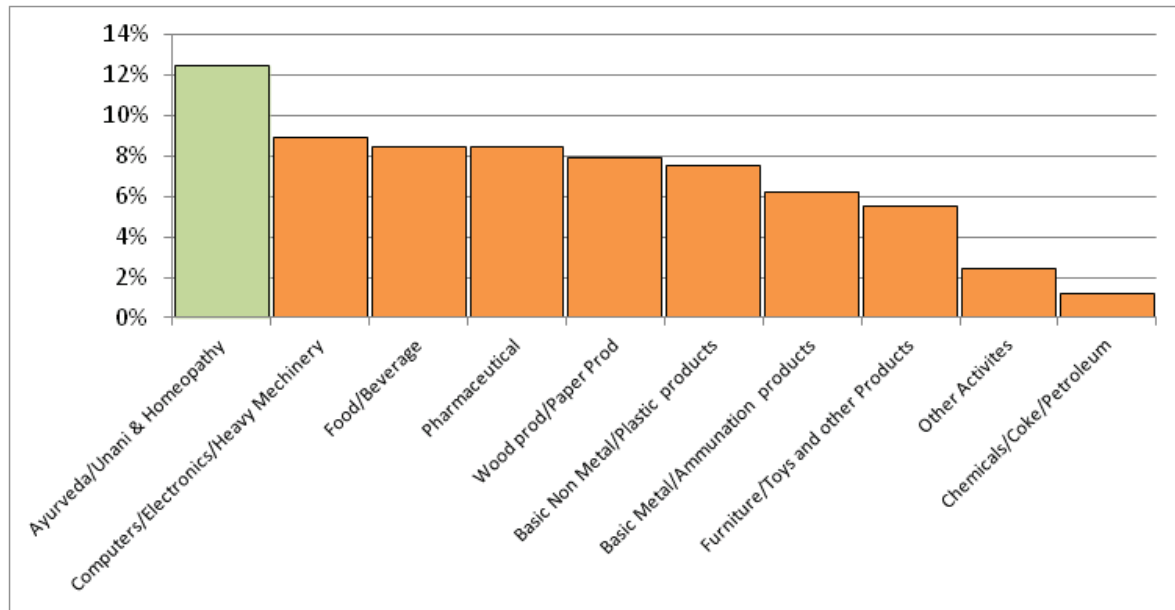
AYUSH manufacturing has surpassed the output growth rate of major industries in India

Since 2014 the sector has picked up a robust pace of growth with output growing from Rs. 11,540 crores during 2014-15 to 19,557.5 crores in 2017-18 (Figure 4.2). Between 2012-13 to 2017-18, the output produced by organized segment of AYUSH drug manufacturing units increased at approximately 12.7 per cent per annum.

Figure 4.2: Total Output of AYUSH Firms from 2012-13 to 2017-18

Source: ASI 2012-13 to 2017-18, (Note: the black curve shows a polynomial trend-line of the output)

Figure 4.3 : Growth Rate of Total Output of major industrial groupings during 2012-13 to 2017-18



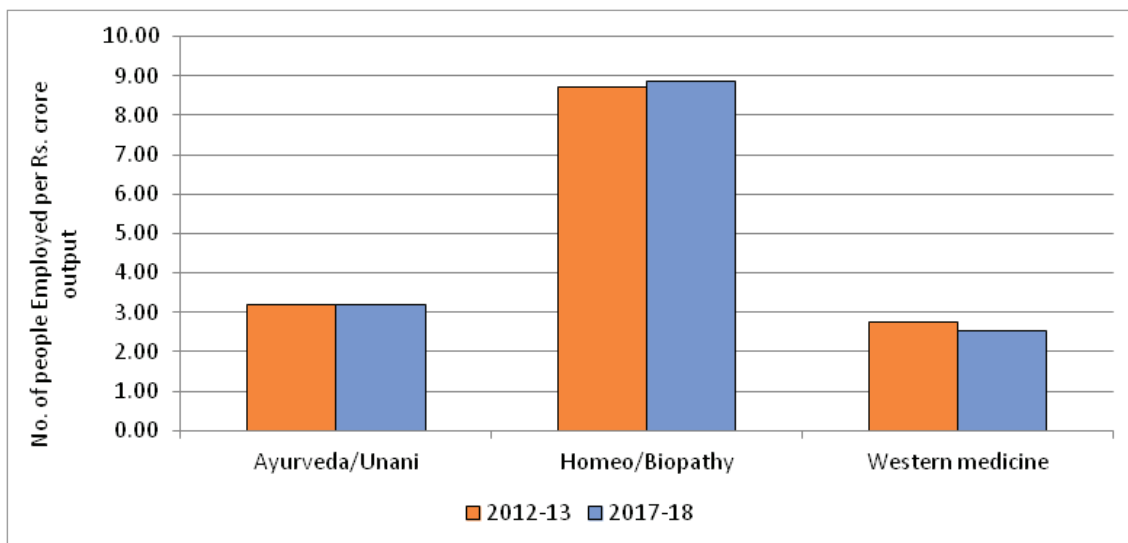
Source: Annual Survey of Industries 2012-13 and 2017-18

The growth rate of total output in the industry has surpassed India's niche industries like computers/electronics, food& beverage and pharmaceuticals (figure 4.3) .

Labour productivity of the sector is at par with modern pharma industry

As per ASI, employment/output ratio for overall Ayurveda/Unani sector declined from

Figure 4.4: Changes in Employment-Output ratio over Time



Source: Annual Survey of Industries 2012-13 and 2017-18

3.21 in 2012-13 to 3.18 in 2017-18 showing a rise in labour productivity. The ratio also declined in the homeopathy segment. As against the perception that AYUSH manufacturing is labour intensive, with low labour productivity as compared to other industries (figure 4.4)) demonstrates that the industry's labour productivity is at par with other major industries like western pharmaceuticals. Growth in labor productivity is often attributed to changes incorporated in the physical and human capital along with infusion of new technology in the sector. Given that labour productivity is a key driver of higher earnings, AYUSH industry demonstrates its strength as an investable sector.

4.2 Export Orientation

While Indian firms are actively participating in global AYUSH trade, export orientation seems to be gathering momentum for all sizes of firms

India has a strong footprint in global AYUSH trade. Exports and imports of AYUSH products have increased considerably in the past decade. In 2020, total exports and imports of sample AYUSH firms in India were to the tune of Rs. 5.4 billion and Rs. 0.6 billion respectively. While contraction in level of exports and imports could be attributed to COVID-19 pandemic, the industry as such has recorded notable rise in trade in AYUSH products. As discernible from Figure 4.2, both exports and imports maintained steady rise during 2010-14. In subsequent years, Indian firms experienced fall in exports as well as imports even though imports declined more sharply than exports. Since 2018, exports are recovering but with uncertainty due to COVID-19-related distress in the economy. It is also evident that trade in AYUSH products was consistent with the growth in sales till 2014 (Figure 4.1 & 4.5).

While both exports and imports of AYUSH firms have witnessed substantial growth in recent years, export orientation in AYUSH manufacturing has been clearly demonstrated.

Except for the period 2016-18, total exports of sample firms was reasonably higher than imports signaling bright growth prospects in the future.

4.3 R&D and Product Innovation

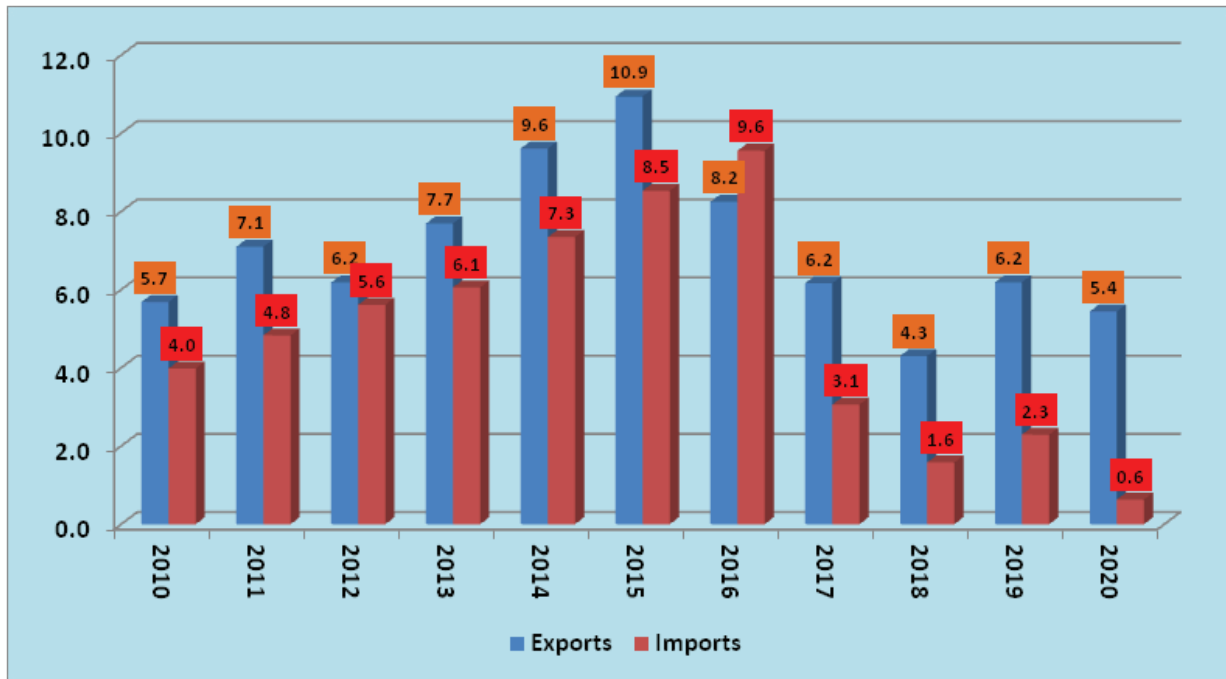
By enhancing investment in R&D, large domestic firms act as torch bearers for the AYUSH sector

Unlike conventional industries, AYUSH industry in India is still in its infancy. Products and services of this industry are still evolving; hence enormous scope for value addition and investment. While standardisation of rules and regulations pertaining to AYUSH products is necessary for orderly development of the industry in the long run, the short- and medium-term growth depends on R&D, product development, branding and marketing efforts. Since acceptability of AYUSH products in all different segments e.g. medicine, cosmetics, food supplements, life style products, etc remains a contentious issue despite growth in the sector, the onus rests on research and innovation. In that respect, AYUSH industry in India has made remarkable progress in recent years. Overall, R&D expenditure by AYUSH firms has increased by 16.8 per cent during 2010-19 whereas it was significantly high during 2010-12 (26.7 per cent) (Table 4.6). It is observed that the level of investment in R&D is comparatively very high relative to smaller firms across the study period. However, the growth in R&D spending by firms with turnover of 5 to 50 crore and 50 to 250 crore is manifestation of the efforts of domestic firms for innovation and product development.

Despite small size of operations MSME firms are investing more in R&D and product development which form the backbone of Indian domestic AYUSH industry

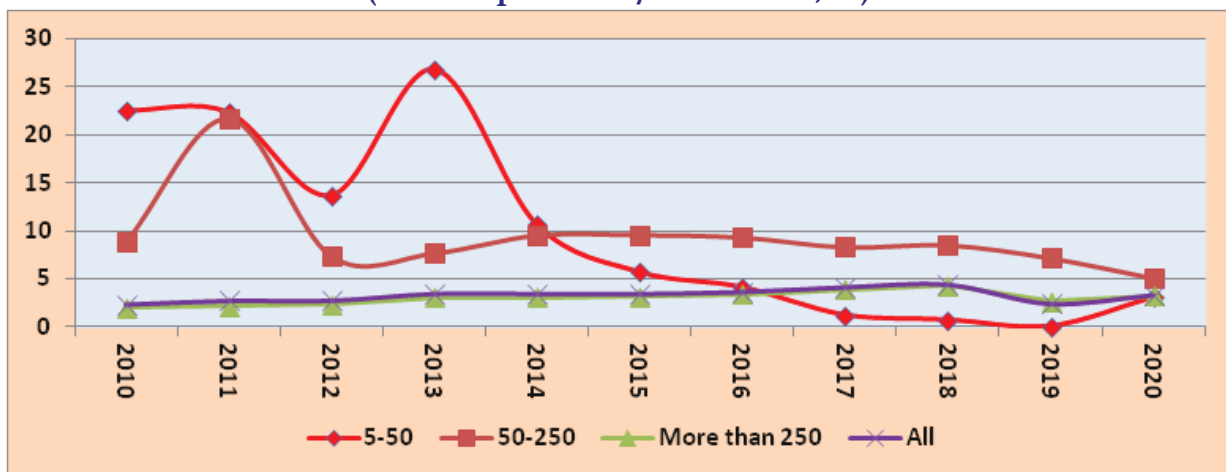
Interestingly, AYUSH industry displays tremendous dynamism for future growth and diversification mainly driven by MSME firms. A close look at Table 4.2 suggests that smaller

**Figure 4.5: Trends in Exports and Imports of AYUSH Firms, 2010-2020
(Rs. Billion)**



Source: RIS based on data from CMIE Prowess accessed on June 20, 2021.

**Figure 4.6: R&D Pattern in AYUSH Industry
(R&D Expenditure/Profit Ratio, %)**



Source: RIS based on data from CMIE Prowess accessed on June 20, 2021.

firms belonging to the firm-size category of 5 to 50 crore and 50 to 250 crore have tended to invest more in R&D over the years. During 2010-12 which was the first phase of recovery from global economic recession in 2008-09,

R&D spending by large firms was growing less compared to firms in 5 to 50 crore and 50 to 250 crore categories respectively. This willingness is also clearly observed in Figure 4.6. Profit, a source of retained earnings of firms, has been

Table 4.2: Growth in R&D Expenditure (CAGR, %)

Period	5 to 50 Crore	50 to 250 Crore	More than 250 Crore	All
2010-12	39.9	45.0	23.4	26.7
2013-19	-23.2	11.6	11.3	10.6
2010-19	-9.3	14.8	18.0	16.8

Source: RIS based on data from CMIE Prowess accessed on June 20, 2021.

wisely used by the smaller firms. The R&D expenditure-to-profits ratio for the period 2010-14 shows the greater R&D efforts by the smaller AYUSH firms. While large firms can afford to invest more in R&D in a sustained fashion, the smaller ones have higher propensity to invest in new products and perhaps value addition to existing AYUSH manufactures.

4.4 Industry Academia Partnership

Technology Transfer for commercialization through public R&D institutions has created synergistic opportunities for entrepreneurship and innovation

One of the key prospects for firms operating in the sector is the Transfer of Technology (ToT) policy for commercializing drugs.

Public R&D institutions like the Central Council of Research in Ayurvedic Sciences (CCRAS) have been developing and validating drugs and technologies process at in-house R&D facilities and also in collaboration with reputed organizations like the CSIR. Policies for commercialising, guidelines focused on transferring technology to industry, calculating royalty and resolving intellectual property rights issues are creating greater transparency in the process. For transfer, technologies are grouped into three categories - independently developed, collaborative efforts and value-added tech. While the royalty is set at 4% of ex-factory sales, lumpsum premium would be calculated on a case-to-case basis depending on commercial viability and translational value. So far, ToT on 12 products has been completed(

Table 4.3: Pharmaceutical Products for ToT

S. No	Product Name	Indications
1	AYUSH -64	Malaria
2	777 Oil	Psoriasis
3	Bal Rasayan	General resistance in children
4	AYUSH Ghutti	Cough, cold, fever and diarrhoea in children
5	AYUSH 56	Anti-Epileptic
6	AYUSH SS granules	Post natal care
7	AYUSH AG Tablet	Anaemia / Ante natal care
8	AYUSH PK Avleha	Post natal care
9	AYUSH PG Tablet	Ante Natal Care (Oedema).
10	AYUSH B R Leham	Paediatric Care
11	AYUSH 82	Diabetes
12	AYUSH SG	Rheumatoid Arthritis

Source: CCRAS.

Table 4.4 Percentage of Inputs sourced indigenously by sector

Sector	Percentage of inputs sourced indigenously
Ayurveda/ Unani	98.5
Homeo/Biopathy	96.8
Others Pharmaceuticals	77.7
Total Pharmaceutical	79.2

Source: Analysis of Annual Survey of Industries, 2017-18

Table 4.3) . Several firms have been granted licences for manufacturing the listed products. These include for example M/S, Dabur India Ltd, New Delhi; M/S Kudos Laboratory India Ltd, New Delhi; M/S LA Granade Herbs & Pharma Ltd, Haridwar; M/s Chaturbhuji Pharmaceutical Co., Haridwar; M/s Altis Life Sciences, Baddi Distt., Solan, Himachal Pradesh; M/s Multani Pharma Ltd, New Delhi; M/s Ayur Force Pvt. Ltd, New Delhi; M/s Swadeshi Ayurved Company, Haridwar and M/s Sanjivan Anusandhan Pvt. Ltd., New Delhi and M/s Ridhi Sidhi Medicare, New Delhi . Academic technology transfer plays a vital role in getting translational research to commercially viable entities. By ensuring that intellectual property is optimally protected and search for qualified commercial partners bring these discoveries to the marketplace, the active TOT in AYUSH also demonstrates the maturity of the industry –academia partnership at work.

4.5 Institutional Support to Industry

Institutional support for raw material procurement is addressing the supply chain constraints for continued growth of the industry

With as much as 98 percent raw materials (Table 4.4) being sourced indigenously, industry enjoys significant advantage in savings, pricing and scale of operations.

To ensure sustained raw material supply, institutional support for cultivation and procurement of 140 prioritized MAPs across

states under NAM has resulted (between 2015-16 and 2020-21) in 456305 hectares in cultivation of MAPs. Following of the end of the NAM, market linkage mechanisms between buyers and sellers are being designed and implemented by NMPB through SMPBs. Under this arrangement manufacturers/ exporters can participate directly in the cultivation of medicinal plants with a buy-back agreement and pre-decided price as well as volume and the cost of cultivation is to be shared on the terms agreeable to the parties viz., farmers / clusters and industry owners. As per information from NMPB Marketing Team, From January 2021 till date, demand for 70,000 metric tons for 100 species of MAPs cultivated over more than 50,000 acres have been shared with SMPBs. MoUs with major AYUSH and herbal industry bodies (ADMA, AMMOI, AMAM, AHNMI, FICCI, PHD) is creating value chain integration of the medicinal plant sector. In the NE region 2000 acres for 7-8 MAPs is being initiated.

R&D by public research institutions for commerce of medicinal plant sector

Research in medicinal plants at various stages in the value addition chain is being done by research and development organisations. (Table 4.5) Institutes under ICAR, CSIR and Indian Council of Forestry Research & Education have been deeply engaged in agro-techniques for improved varieties of plants. For example, one of the 14 research institutes under the Indian Council of Forestry Research & Education,

Table 4.5 R&D in medicinal plants by public institutions

Institutions	Central Agency	Description of activities
AICRP, Directorate of Medicinal and Aromatic Plants Research (DMAPR), Anand,	ICAR	Domestication and breeding of medicinal plants
Indian Institute of integrative Medicine, Jammu, Institute of Himalayan Bioresource Technology (IHBT), Palampur, CIMAP Lucknow	CSIR	Agro-technology of medicinal plants
CDRI Lucknow	CSIR	Screening of medicinal plants and drug development
NBRI Lucknow	CSIR	Conservation, pharmacognosy and phytochemistry of medicinal plants
North East Institute of Science and Technology (NEIST), Jorhat	CSIR	Identification of species and technology development for commercial application of plants
14 Forest Research Institutes in Dehradun, Jabalapur, Jodhpur, Shimla, Ranchi, Hyderabad, coimbatore, Jorhat, Bengaluru, Chhindwara, Aizwal, Pryagraj , Agartala Vishakhapatnam	Indian Council of Forestry Research & Education	Documentation , conservation, agro-technology and germplasm development of medicinal plants

Source: RIS based on informaion from Research Institutions

Tropical Forest Research Institute, Jabalpur, has released two improved varieities of Rauvolfia serpentina (Giloy)- TFRI-RS 1 reporting high root yield and TFRI-RS-2 with high reserpine and alkaloid content. The Central Insititue of Medicinal and Aromatic Plants (CIMAP) has produced 150 improved varieties in 48 MAPs species of medicinal and aromatic plants.

NMPB's latest MoU with National Botanical Research Institute (CSIR-NBRI) and IHBT Palampur to develop quality planting material of high value (including threatened species) for different agro-climatic zones is projected to close the demand supply gap of medicinal plants further. Besides, the Central AYUSH research Councils like CCRAS have developed upto 30 protocols for high value medicinal plants and in-vitro propagation of 14 plant species. R&D

of medicinal plants are significant initiatives as the industry increasingly moves towards sustainable procurement of raw materials through systematized cultivation.

Insurance coverage for health services and MAP cultivation would enable stronger integration of AYUSH drugs with healthcare sector

Crop insurance being one of the key imperatives for integrating medicinal plants as part of the agricultural sector, efforts are on by NMPB to include crop insurance under the Pradhan Mantri Fasal Bima Yojana. Given the potential of medicinal plant sector to generate revenue and livelihood in the agricultural sector other central schemes may design insurance programmes for the sector. As yet, Rashtryia Fasal Bima Karyakram etc do not cover medicinal plants.

Similarly, IRDA's notified 'Guidelines on Standard Health Insurance Product' providing for AYUSH coverage in health insurance in early 2020 is to provide AYUSH drug manufacturers with the required boost. Many private insurance companies such as, Max Bupa, Star, HDFC Life, Future Generale also offer coverage to Ayurveda care.

MSME support through cluster development scheme is creating the necessary infrastructure for future growth of the industry

Capacity building for MSMEs has been the focus of the recent MoU between M/o AYUSH & M/o MSME. It includes need assessment and identification of AYUSH Clusters by field offices and roping them in Schemes of Mo MSME such as 'Zero Defect Zero Effect' for lean, manufacturing practice, Procurement & Marketing Support Scheme for National/International trade, fairs, exhibitions, GeM, packaging, E-Marketing and export and Incubation - Start-Up / Enterprise Development. Besides, AYUSH focussed initiatives would include CART (Centre for Agro Rural Technology) Division for medicinal plant sector in rural areas and AYUSH focused Technology centres. The cluster development programme of the Ministry of MSME (MSME-CDP) CFCs projects completed in 2019 have included the pharmaceutical cluster in Karnal (Haryana) with 226 expected beneficiaries and pharmaceutical Cluster in Cuttack, Odisha, with 146 expected beneficiaries. Both clusters have a substantial number of AYUSH enterprises.

4.6 Ease of Business Facilitation

Ease of doing business through fundamental reconfiguration of process, shortening turnaround time and increasing efficiency in manufacturing logistics in coming years is being driven by digitisation drive through E-Aushadhi and E-Charak

Digitization of governance including inspection/compliance, regulatory

communication and access to institutional capital along with digitized trade/market platforms by the Ministry of AYUSH is set to become a significant enabler for business development and strategic investments in the near future.

The digitization of licensing process through E-AUSHADHI portal (launched in February 2019 for online licensing of AYUSH pharmaceuticals) is to facilitate online application of licenses besides increasing transparency and accountability in drug licensing and procurement. The portal also provides information on licensed AYUSH manufactures and their products, cancelled and spurious drugs, and contact details of the authorities concerned with specific grievances. Till date, 940 manufacturers have registered on the portal.

The digital platform for domestic MAP trade through NMPB's E-CHARAK facilitates collectors, farmers, traders and manufacturers in 7 languages. It hosts agro-techniques of 104 MAP crops, GAP, GFC, post-harvest management techniques, schemes, among others. It also provides a graphical representation of fortnightly market price of 110 Medicinal Plants from 25 Markets spread across the country. Farmers/ seller of these 110 widely traded medicinal plants can interact direct through this platform, post queries and sell his/her produce directly to the buyer. Registered buyers can also quote their queries on the website along with the desired prices. The platform has not only made it easier to monitor live changes in price level of medicinal plants and thus mitigate the problems of demand and supply, it has also become an effective tool eliminating the need of intermediaries and middle men.

Currently, e-Charak mobile application has 7337 registered users; 28, 13,975 buyer-seller interactions along with 6,731 resolved queries supported via online chat system.

Figure 4.7 Key features of e-Charak



Source: NMPB

Perpetual licensing is a significant step to easing regulatory norms for manufacturing firms

Since the liberalisation and deregulation of the Indian economy in 1991 most industries have been exempt from obtaining an industrial licence to start manufacturing in India. In recent years license norms have been further eased through removal of location restrictions for some industries, online licence registration for G2B services and relaxation of compulsory licensing for some industries under the Industries (Development and Regulation) Amendment Act, 2016. Focus on license requirement is only limited to industries that may impact health, safety and national security.

As a healthcare industry, AYUSH product manufacturers are therefore required to obtain a license and subsequently renew it every five years. However, in the keeping with ease of

business facilitation, the Drugs and Cosmetics Rules 1945, are being revisited. While licence for manufacturing AYUSH products is still mandatory, waiving off renewal of licences to manufacturers has been initiated. Under the proposed amendments to the Rules (Part VI), licensees will be offered a perpetual licence obtained initially, thus easing curbs on AYUSH industry like most other manufacturers.

4.6 Future Growth and Investment Opportunities

Growing interest by large FMCG companies and liberal FDI policy could catalyse investments into value added segments of the industry

AYUSH products present significant growth opportunity in India and rest of the world. Contribution of exports can be significantly expanded from the current level of Rs. 5.4 billion. Given high potential demand and

Box 4.1: AYUSH adapting to changing market requirements:

Case Study of Dabur

From a size and brand perspective, most AYUSH companies are relatively small when compared to companies like Dabur which has grown over the years to establish itself as a large FMCG company with a focus on Ayurveda and ancillary products. It has strong balance sheet, a large distribution network, a wide product portfolio and a strong brand, backed up by strong manufacturing infrastructure.

Dabur has three key business segments: Healthcare (32 per cent), Home and Personal Care (HPC) (51 per cent) and Foods (17 per cent). Healthcare segment comprises of health supplements (Chyawanprash etc), Digestives (Hajmola, etc.) and OTCs. HPC comprises of hair care, oral care, skin care and home care. Oral care and Hair Care as specific segments are their largest businesses accounting for 17 per cent and 22 per cent respectively.

In terms of their international business, while they have presence across most of the regions, Africa and Middle East account for 50 per cent of international revenues. The growth strategy is predicated on strengthening brands, investments in R&D to widen product portfolio and drive premiumization, access new markets, further increase in distribution, enhancing capability in Ayurveda through doctor advocacy, increasing customer touch points (Dabur Chikitsalayas, health camps etc).

Source: RIS based on information from various sources

relatively nascent level of the industry, there are significant opportunities for existing and new companies in this sector. These opportunities are across the entire value chain of the industry – from incorporating best practices and quality standards in supply of credible raw materials, latest manufacturing processes, setting up of a sophisticated and global distribution networks, development of industry and region specific brands, greater research and development, commercialisation of new products, providing assistance of cataloguing and developing closer coordination with other medicinal systems such as allopathic stream to provide complementary benefit. The global recognition of Yoga and

the strong brand that it has developed into is a testimony to the inherent strengths of the Indian traditional health system.

The strong potential of the industry is also demonstrated by robust growth in Indian companies involved in this sector. Several large FMCG companies which had no presence in the AYUSH sector in the past have developed several business lines in this segment within a relatively short period of time. On the other hand, while many companies are small, companies are often found acquiring scale rapidly and prepare well to tap into domestic and international markets. Given the consistent focus of the government to the AYUSH sector,

Section: 5

Trade Performance of Indian AYUSH Sector

Blooming Indian exports in AYUSH products amidst slump in the world economy

India has established its lusty footprints in the global trade of the herbal medicinal sector. Country's exports in the sector expanded rapidly from US\$1.09 billion in 2014 to US\$1.54 billion in 2020, registering a robust growth rate of 5.9 per cent annually, though the estimated statistics for the export sector was still underestimated in the absence of authentic statistics for the plant derivative sector. The hallmark of the AYUSH sector exports is that it has been catching up in line with the vertical value chain process and the herbal pharmaceutical segment would steer the export performance of the Indian herbal medicinal exports in the coming years. Despite its accomplishments in recent years, AYUSH exports have been an untapped sector with tremendous prospects for growth. Although broadly there have been indication of increase in exports of AYUSH products from India, quantification of the volume and value of exports of AYUSH products is difficult due to lack of proper and complete identification of HS product codes. As mentioned earlier in this report, there are a variety of products that constitute the AYUSH export basket, ranging from drugs, herbs, extracts, cosmetics

and nutraceuticals. Some products from HS Chapters 12, 13, 14 and 30 that can be classified under the AYUSH basket can be analysed. The exports in these AYUSH products show an increasing trend in the quantum of exports. It should be noted that in the present analysis, specific focus has been given on plant raw materials (classified under Chapter 12), extracts (Chapter 13) and AYUSH pharmaceuticals (Chapter 30). AYUSH products are also consumed in the form of nutraceuticals, food supplements, spices and cosmetics and they go via HS chapters 21, 29, etc. However, again it is difficult to separate out AYUSH components from those Chapters due to unavailability of the codes. Hence, the present country-level estimate may understate the actual exports of India to the world in AYUSH products.

The total AYUSH export of India has increased from US\$ 1.09 billion in 2014 to US\$ 1.54 billion in 2020. The herbal pharmaceutical or medicament sector constituted the bulk of AYUSH exports from India, as shown in Figure 5.1, accounting to 35.2 per cent in 2020¹. The extracts and nutraceuticals sector shared around 22 per cent each in the total AYUSH exports, whereas medicinal and aromatic plant recorded 19.9 per cent in 2020. It has also been observed that the medicinal plant share in total exports

has been decreasing over time and the share of herbal pharmaceuticals and nutraceuticals has been increasing in the export markets. On the other hand, share of extracts did fall down in the till 2017, it regained its status in 2019 and 2020. This had also made India as contributor of 10 per cent of the world’s exports in extracts. A similar share of India is also found in medicinal plants highlighting importance of the country at the global platform.

5.1 India’s Trade in AYUSH Medicinal and Aromatic Plants

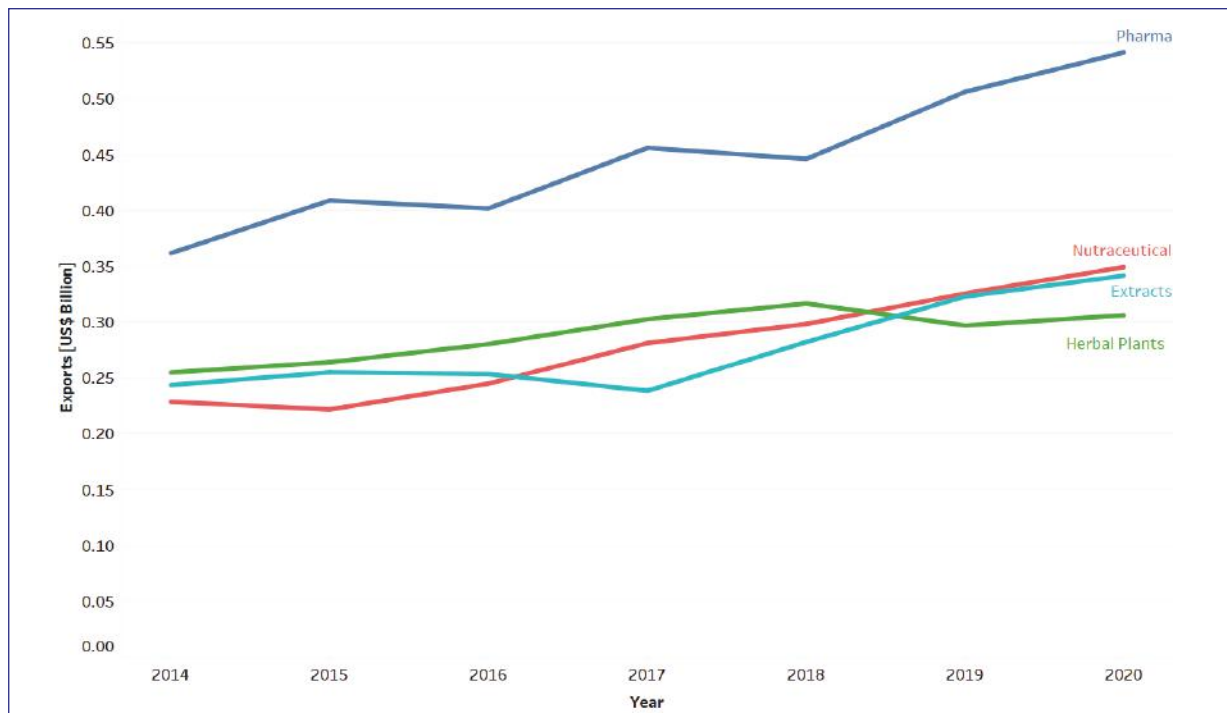
Upsurge in the exports of Medicinal and Aromatic Plant in India is not commensurate to the loss of herbal biomass of the country

HS Chapter 12 deals with trade in raw plants within which the HS heading 1211 deals with the exports of Medicinal and Aromatic Plants (MAPs). It should be noted that the exports of MAPs from India increased from US\$ 241.4 million in 2014 to US\$ 367.1 million in 2020,

as shown in Table 5.1, registering a CAGR of 7.23 per cent in the period. With the continuous rise in the exports, the sector also earned trade surplus for the Indian economy, which increased from US\$ 173.08 million in 2014 to US\$ 262.2 million in 2020. However, a large quantum of these exports goes in the other categories of HS-12119019, HS-12119029, HS-12119039 and HS-12119099, making it difficult to track the specific commodities which are being exported from these specified HS codes. Among the products that are specified, Psyllium (husk and seeds) constituted around 70 per cent of the total exported MAPs from the country in 2020. The exports of Zedovera have also increased at an impressive rate of 43.4 per cent per annum. Other significant plants under MAPs export include Tukmaria, Basil, hyasop, rosemary sage, savory, Senna, Psyllium husk and Psyllium seed (isobgul).

It is also to be note that in terms of volume, Indian exports registered a growth rate of

Figure 5.1: India’s exports in AYUSH products to the world



Source: RIS based on ComTrade, World Bank, accessed on June 20, 2021

Table 5.1: Export of AYUSH Products Defined in MAPs (US\$ Million)

HSCode	Description	2014	2016	2018	2020
12112000	Ginseng roots frsh/drid w/n cut crshd/pwdrd	0	0.06	0	0.07
12113000	Coca leaf frsh/drid w/n cut crshd/pwdrd			0.01	0
12114000	Popy straw frsh/drid w/n cut crshd/pwdrd	0			0
12115000	Ephedra				0
12119011	Ambrette seeds(must grains of vgtbl kngdm)	0.17	0.01	0.01	0.02
12119012	Nux vomica dried ripe seeds	0		0.06	0
12119013	Psyllium seed (isobgul)	1.91	2.54	5.48	3.18
12119014	Neem seed	0	0	0.03	0
12119015	Jajoba seed		0		0.01
12119019	Other seeds frsh/drid w/n cut crush/ pwdrd used in perfmry,pharm etc.	4.87	3.55	5.67	3.49
12119021	Beladonna leaves	0.11	0.12	0.04	0
12119022	Senna leaves and pads	14.34	10.04	12.48	18.42
12119023	Neem leaves/powder	0.2	0.2	0.28	0.44
12119024	Gymnema powder,	0.16	0.57	0.46	0.36
12119025	Cubeb powder	0	0.05	0.02	0.01
12119026	Pyrethrum	0.03	0.03	0.01	0
12119029	Other levs,pwdr,flurs & pods frsh/drd w/ncut crush/pwd	14.61	12.34	21.46	14.16
12119031	Cascara pharmac bark	0.04		0	0
12119032	Psyllium husk (isobgul husk)	151.07	196.61	200.92	259.24
12119033	Cambodge fruit rind/the dried pharmacy of the fruits of garcinia cambogia	0.13	0.18	0.08	0.01
12119039	Othr bark, husk & rind frsh/dried w/n cut crush/pwd	1.85	1.25	0.84	0.73
12119041	Belladonna roots		0.02	0	0
12119042	Galangal rhizomes & rts incl. greater galanga	1.3	0.34	0.21	0.41
12119043	Ipecac dried rhizome & roots	0.03	0.01	0.01	0.03
12119044	Serpentina roots	0.04	0.02	0.05	0.01
12119045	Zedovary roots	2.26	10.37	14.98	19.66
12119046	Kuth root	0.1	0.04	0.13	0.01
12119047	Sarsaparilla	0.34	0.33	0.42	0.94
12119048	Sweet flag rhizome	0.16	0.13	0.3	0.13
12119049	Other roots & rhizomes frsh/drd w/n cut crush/pwd	7.5	4.04	3.5	5.82
12119050	Sandal wood chips and dust	3.94	1.53	0.64	0.56

12119060	Vinca rosea (herbs)	0.93	0.9	0.96	0.39
12119070	Mint,incl. leaves(all species)	0.23	0.36	0.45	0.45
12119080	Agarwood (inclndng chips & dust)	0.54	0.58	0.55	1.17
12119091	Chirata	0.03	0.01	0.03	0
12119092	Tukmaria	1.33	4.62	4.26	1.45
12119093	Unab (pharma jujube or pharmac dates)	0	0		0
12119094	Basil,hyasop,rose mary sage,savory	4.01	3.03	4.85	4.4
12119095	Lovage		0	0	0.01
12119096	Garcelona	1.33	0.17	0.1	0.23
12119099	Other plants & parts of plants used in primary, pharmacy, insecticidal/fungicidal purpose,fresh/dried	27.9	19.27	21.74	31.29
Grand Total		241.46	273.32	301.03	367.1

Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S), accessed on June 20, 2021

8.83 per cent per annum, increasing from 1.03 lakh Metric Ton exported in the year 2018 to 1 lakh 22 thousand Metric Ton of MAPs in 2020. Like in previous chapter, here too we note that the growth rate in value of exports MAPs is greater than the growth in the volumes of MAPs

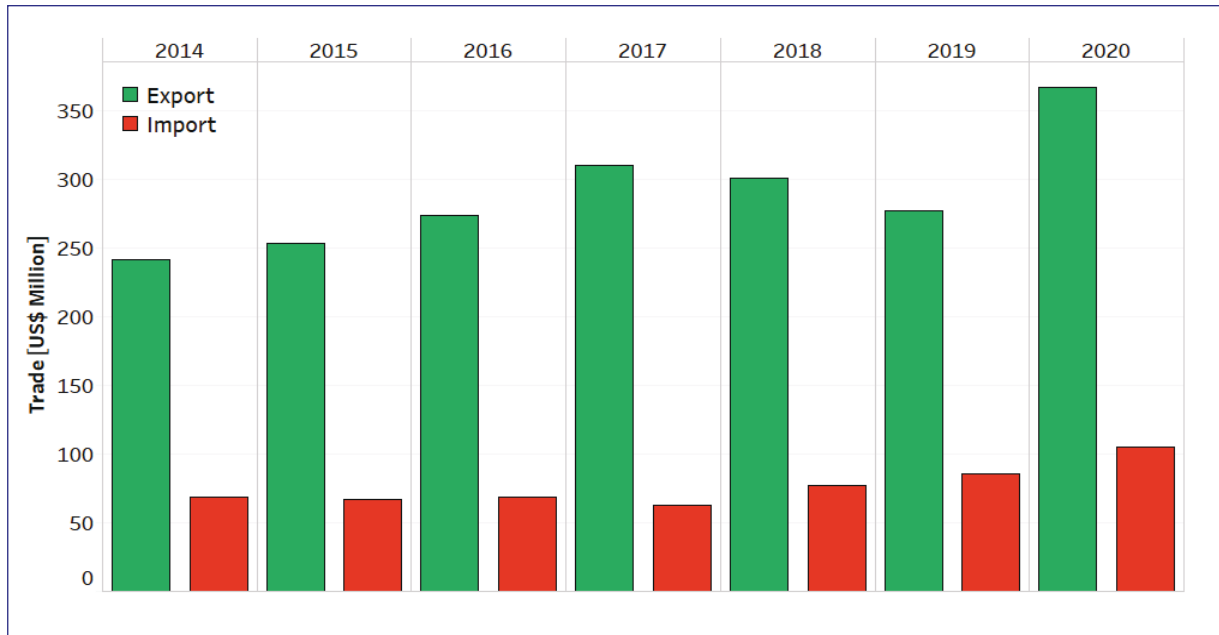
exported, that may be indicative of inflationary trend in the prices of MAPs.

Upsurge of India's global export prices of medicinal plants, providing a major thrust to the sectoral exports

Table 5.2: Growth in Unit Export Price of Selected Medicinal Plants (in US\$/kg)

HS Code	Description	2014	2015	2016	2017	2018	2019	2020
12119013	Psyllium seed (isobgul)	2.23	1.91	2.96	2.78	2.57	2.42	2.31
12119022	Senna leaves and pads	1.14	1.09	0.91	0.79	0.96	1.10	0.93
12119032	Psyllium husk (isobgul husk)	3.87	4.68	4.57	5.56	5.70	3.56	4.59
12119045	Zedovary roots	2.07	2.01	2.23	3.15	3.19	2.80	2.53
12119047	Sarsaparilla	6.89	7.22	8.24	7.33	7.53	10.00	2.47
12119050	Sandal wood chips and dust	31.82	52.74	31.57	25.19	23.82	28.55	7.72
12119060	Vinca rosea (herbs)	1.76	1.63	1.81	1.80	1.92	1.36	1.46
12119080	Agarwood (inclndng chips& dust)	27.96	28.59	14.11	19.92	18.48	36.53	30.22
12119092	Tukmaria	2.05	3.14	3.38	2.05	1.73	1.69	2.51
12119094	Basil,hyasop,rose mary sage, savory	2.34	3.08	2.24	2.42	2.84	2.13	1.92

Source: RIS based on Directorate General of Commercial Intelligence and Statistics (DGCI&S), accessed on June 20, 2021

Figure 5.2: Trade of Medicinal and Aromatic Plants from India

Source: RIS based on Directorate General of Commercial Intelligence and Statistics (DGCI&S), accessed on June 20, 2021

There has been an increase in the unit export price of the top 10 exported herbs from India in Rupee terms. Agarwood is the most remunerative herbal plant exported from India with a price of more than Rs 2000 per kg. Additionally, this species recorded the highest CAGR of 25 per cent per annum, where the price grew 9.4 times in 2020 as compared to 2010.

Note that except Sandal Wood, all the remaining 9 plants showed positive growth in their respective price levels. In fact, 6 of these plants show a CAGR of more than 5 per cent per annum between 2010 and 2020. Although Sandal Wood is one of the most expensive barks in the world, the trade in the species has lost its value due to excessive poaching, strict regulations and long gestation period. Psyllium husk (Isobgul) is the largest exported medicinal plant from India. The export price of Isobgul monotonically increased for 7 consecutive years from 2011 to 2017. Though there was a sharp drop in prices in the year 2019 but it picked up again during 2020. Between 2011 and 2020 the

prices grew at a rate of 11.2 per cent per annum.

However, the trend of unit price in US Dollar terms shows a different picture. All the products witnessed volatility in unit prices. Though sandal wood was the most expensive product among these products in 2014 accounting to US\$ 31.82 per kg, it has reduced to US\$ 7.72 per kg in 2020. On the other hand, unit price of Agarwood has increased sharply in 2019 and reached a high at US\$ 30.22 per kg. Senna leaves and pads recorded the lowest per unit price followed by Vinca rosea (herbs) and Basil, hyasop, rose mary sage, savory, as seen in Table 5.2.

Exports of MAPs increasing at a faster rate than imports, contributing to fructification of trade surplus in the sector

The aggregated imports and exports on MAPs from India are presented in Figure 5.2. It is evident from the figure that exports of MAPs have increased at a faster pace than the imports of MAPs, leading to a rise in trade surplus earned from the same. Note that, there was a slight decline in the export value of MAPs

from India in the year 2019-20. A significant portion of this decline is explained by the fall in the price of Isobgul for the same year as seen in Figure 5.2. However, going forward, more focus should be given on the exports of Value-Added Products (VAPs), such as extracts, drugs and formulations instead of primary raw materials, which would ensure India's penetration in value chains in this sector.

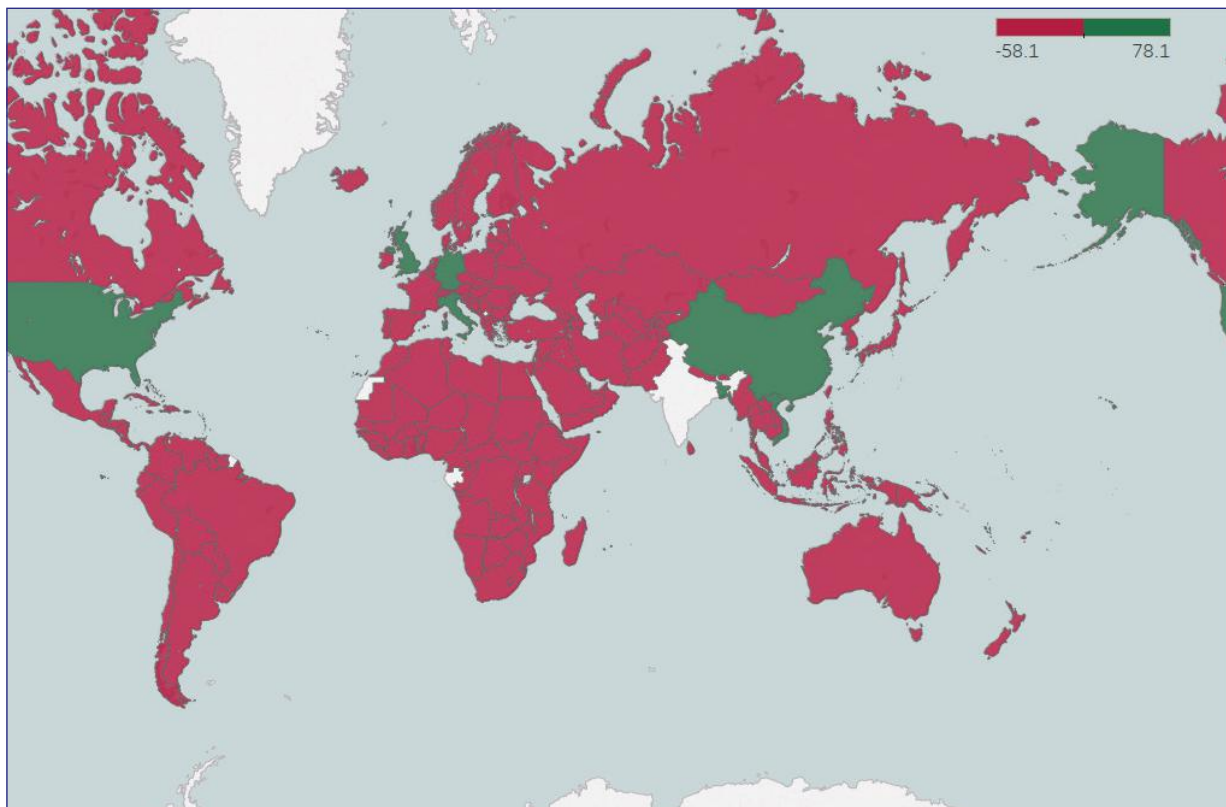
In terms of regions, most of India's exports of MAPs in volume terms go to three regions, namely America, Asia and Europe (See Figure 5.3). Recent demand from Europe has led to a surge in exports of MAPs in that region. Note that, in America and Europe, mostly high value medicinal plants are being exported, whereas exports of low value plants are concentrated in the Asian region. There has been a secular increase in exports of MAPs across all the

regions of the world. Although, Africa has a rich culture and history of using Traditional and Herbal Medicines, India has not been able to penetrate the African markets yet.

Americas and Europe are high-valued MAPs exports market for India, whereas low-valued exports are heading towards Asian market

Both the volume and unit value of exported medicinal plants to the region has remained low. However, economic growth in African region is expected to increase the demand for traditional and herbal medicines which makes it a potential market to explore in the future. The India-Africa Forum Summit 2015 declaration calls for enhanced collaboration in the field of Traditional Medicine. The declaration also calls for promoting the use of Traditional Medicines. Such initiatives are likely to boost the traditional medicine and MAPs trade between the two regions.

Figure 5.3: India's Export of MAPs in the world, 2020 (in US\$ Million)



Source: RIS based on Directorate General of Commercial Intelligence and Statistics (DGCI&S), accessed on June 20, 2021

5.2 India's exports of Plant Extracts to the World

Moderately high export growth in herbal plant extract sector continued even during the second phase of the global recession

A proportion of AYUSH products are also exported in the form of plant extracts. India's exports in extracts have increased from US\$ 248.7 million in 2014 to US\$ 360.87 million in 2020, as shown in Table 5.3. This sector is growing at a CAGR of 6.4 per cent per annum for the period 2014-20. Majority of share of the AYUSH extracts have been confined to HS 13021919 – other extracts and the share has grown from 81.7 per cent in 2014 to nearly 89 per cent in 2020. A similar problem of lack of product specific HS lines can be seen in Table

5.3 below, recording the exports of extracts and vegetable planting material. Hence, it is important to separate out the AYUSH products.

Cambodge and Neem extracts remain the major contributors to AYUSH extract exports

Of the products that are specified, Cambodge (also known as Malabar Tamarind) and Neem extracts form a significant proportion of the exports. Exports of Neem extracts have gained significant draft in last 10 years with CAGR of 14.4 per cent per annum as it is also one of the major antifungal ingredients in many of Ayurvedic classical formulation. On the other hand export value of Cambodge has undergone a significant decline between 2014 and 2020 nearly at the pace of rise in Neem extracts.

Table 5.3: Exports of Plant extracts and vegetables and planting material from India (in US\$ Million)

HSCode	Description	2014	2016	2018	2020
13012000	Gum arabic	1.8	4.25	0.9	2.41
13019011	Asian gum	2.87	2.02	2.54	2.11
13019014	Benjamin ras			1.54	0
13019016	Karaya gum(Indian tragacanth) hastab	1.26	0.95	0.93	2.3
13019017	Tragacanth (adraganth)	0	0.01	0.01	0
13019018	Storax	0.01		0	0
13019019	Other natural gums	7.87	5.01	1.31	1
13021200	Saps & extracts of liquorice	0.17	0.04	0.06	0.1
13021911	Extracts belladona	0.51	0.05	0.29	0.31
13021912	Extracts cascara sagrada			0	0.06
13021913	Extracts nuxvomica	0			
13021914	Ginseng extract including powder	0	0.04	0.05	0.07
13021915	Agarose		0	0	0
13021916	Extracts, neem	7.36	11.45	14.59	16.98
13021917	Gymnema extract,	2.16	1.08	2.13	1.95
13021918	Cambodge extract	21.34	20.23	14.59	11.23
13021919	Other extracts	203.41	210.18	245.97	322.35
Total		248.76	255.31	284.91	360.87

Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S), accessed on June 20, 2021

Note: Exports of Extracts does not match the estimates provided in Figure 5.1 due to use of different databases. exported via this channel from the non AYUSH products to be able to get a conspicuous estimate for this sector.

5.3 Trade Trends in AYUSH Medicaments and Pharmaceuticals in India

Ayurvedic Medicament holds the key to India's overall medicament exports of the herbal medicinal industry

During 2014-2020, the export of AYUSH medicaments rose from US\$ 117.32 million to US\$ 145.24 million, registering a CAGR of 3.6 per cent, as represented in Figure 5.4. However, it can be seen from the figure that the exports grew rapidly from US\$ 122.8 million in 2016 to US\$ 145.2 million in 2020 at a CAGR of 4.28 per cent

Table 5.4: Exports of Medicaments of AYUSH systems from India (in US\$ Million)

HSCode	Description	2014	2016	2018	2020
30039011	Medicants of Ayurvedic system	17.82	15.65	14.21	13.76
30039012	Medicants of Unani system	0	0	0.05	0.04
30039013	Medicants of Siddha system	0.01	0.01	0.02	0.11
30039014	Medicants of homoeopathic system	0.57	0.28	0.29	0.76
30039015	Medicants of bio-chemic system	0.35	0.09	0.03	0
30049011	Medicaments of Ayurvedic system	94.98	103.78	124.87	126.57
30049012	Medicaments of Unani system	0.09	0.28	0.52	0.63
30049013	Medicaments of Siddha system	0.13	0.13	0.35	0.18
30049014	Homeopathic medicine	1.3	0.99	1.23	2.08
30049015	Medicaments of bio-chemic system	2.07	1.59	0.94	1.11
Total		117.32	122.8	142.51	145.24

Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S), accessed on June 20, 2021

Note: Exports of Medicaments does not match the estimates provided in Figure 5.1 due to use of different databases.

The exports in medicaments/pharmaceuticals have increased from US\$ 117.32 million in 2015 to US\$ 145.24 million in 2020. Table 5.4 provides a broad overview of pharmaceutical exports in AYUSH sector over the past five years. It is clear from the table that the medicaments of Ayurveda form the bulk of such exports going out of the country. Out of total exports of US\$ 145.2 million worth of AYUSH medicaments exports in 2020, around 87.1 per cent are from the Ayurveda system of medicine. However, at this HS level, we cannot weed out specific commodities that are exported under these heads.

AYUSH pharmaceutical sector has been the flag bearer for the surging sectoral trade and flourishing trade surplus of the sector

per annum. The imports of traditional medicine drugs in these six years grew at a slow pace as compared to exports from US\$ 30.3 million in 2014 to US\$ 44.89 million in 2020 at a growth rate of 6.7 per cent per annum. Like MAPs, the exports of AYUSH medicaments also earn trade surplus for India.

Mixed of developed and developing countries are principal export destinations of medicament sector

At the regional level, the European Union was the most favoured destinations for medicament exports, accounting for 14 per cent of country's exports. Apart from the EU, North America and ASEAN region also received Indian exports of medicaments of around 11 per cent and 7.6 per cent, respectively. However, at country level,

Figure 5.4 Exports and Imports of Traditional Medicine Drugs



Source: RIS based on Directorate General of Commercial Intelligence and Statistics (DGCI&S), accessed on June 20, 2021

the majority of pharmaceutical exports are being exported to Nepal and United Arab Emirates (UAE) with a largest share 11.1 per cent and 10.8 per cent respectively in 2020, followed by the United States (10.2 per cent), as shown in Figure 5.5. It should be noted that both

Nepal and UAE recognise Ayurveda as a system of medicine. Nepal has developed a National Policy on Ayurveda and recognizes AYUSH degrees. Similarly in UAE, there are around 500 plus AYUSH practitioners in Dubai alone.²

5.4 India's Export Competitiveness in Medicinal Plants and Selected Extracts Products

India's export competitiveness remains several times higher than its current exports on account of huge price competitiveness in AYUSH sector

India's export share in herbal plant and extract in the world is nearing 10 per cent in 2019. Yet, it is exporting less than 40 per cent of its total potential.

India's Total export potential in herbal plants and extracts in the world is USD 2.27 billion where major share of export potential is covered by raw materials (87 per cent). Interestingly, 50 per cent of the export potential can be achieved in mere five partner countries like, the United States, Germany, Japan, France, and South Korea, as shown in Figure 5.5. The figure represents the share of India's export competitiveness in various countries as a percentage of total potential. The redness of partner country's colour implies lesser trade potential. Change in the colour towards violet implies rise in India's export competitiveness, whereas no colour means absence of India's potential in the country.

Separating herbal plant and extract market, the constitution of export potential is similar as top 5 countries constitute more than 50 per cent of India's total export potential. India's export potential in herbal plants is majorly inclined towards developed nations, where countries like the United States, Germany, and Japan provide

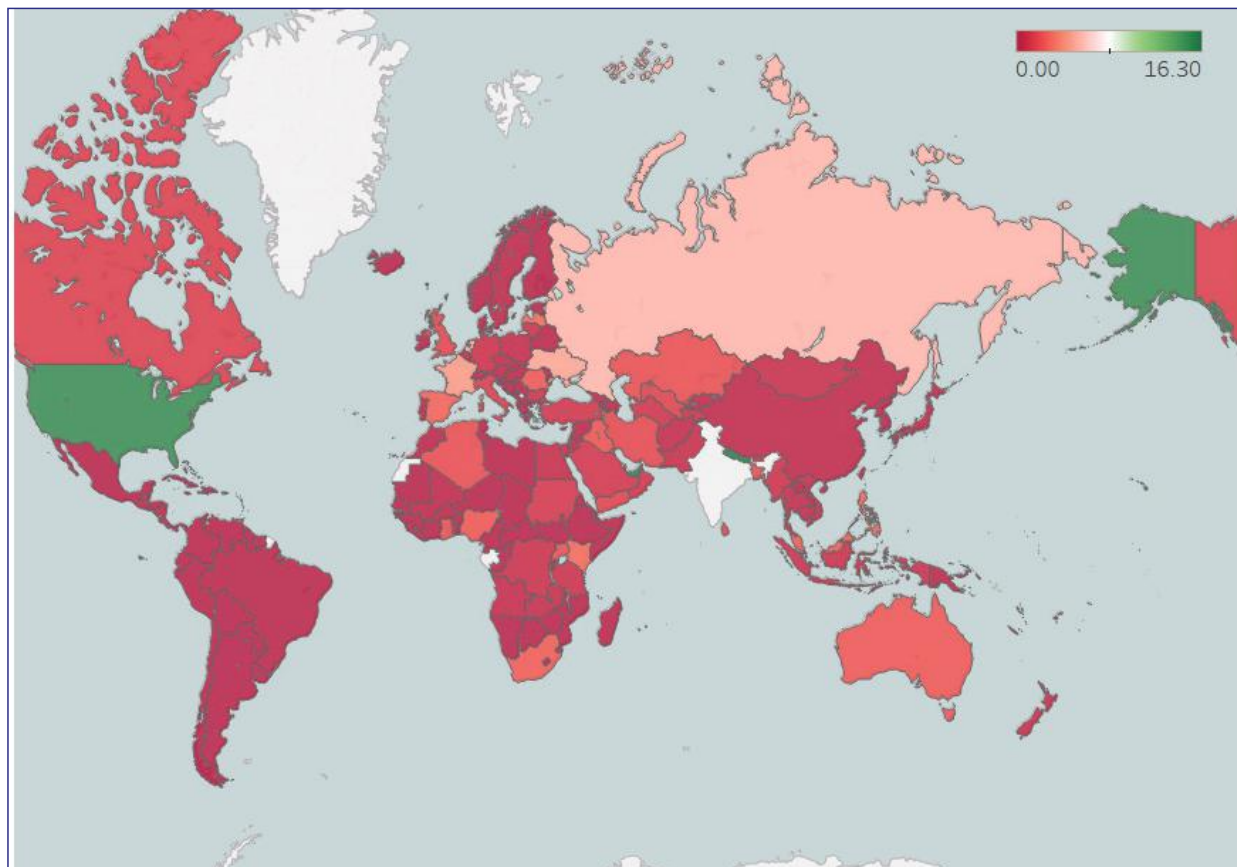
market access of more than 10 per cent to India's export potential. For extracts, India's largest export potential is in France, constituting 23.4 per cent followed by the United States (12.2 per cent) and Germany (6.7 per cent). Among the major export potential destinations there are only few developing countries like South Korea, Singapore, and Malaysia in herbal plants and China, Mexico, and Brazil in extracts. However, to achieve its potential various trade policy measures need to be taken to promote AYUSH sector of the country.

5.5 Export Facilitation

Creation of the AYUSH Export Promotion Council an important milestone for trade facilitation

Creation of Export Promotion Councils (EPCs) in India are based on strategic relevance of an industry in offering long term competitive advantage to the country in global markets and which, owing to its nature and size is not getting focussed attention. There are 14 EPCs under the administrative control of the Department of Commerce. Registered as non-profit organizations under the Companies Act/ Societies Registration Act, the Councils perform both advisory and executive functions. An EPC in keeping with the understanding of the potential of AYUSH industry has been approved the Ministry of Commerce has approved in June 2021. Presently, by- laws for AYUSH Export Promotion Council (AEPC) are being drafted by FICCI with support from PHARMEXIL.

Figure 5.5: India's export potential in Herbal plants and Extracts



Source: RIS based on ComTrade, World Bank, accessed on June 20, 2021

Table 5.5 List of some certifications required for AYUSH Export

List of Certifications	Certification body
ISO 9001: 2015, ISO 22000: 2018 , ISO 45001 , ISO 14001	Bureau Veritas
HALAL-Indonesia	MUI
Kosher	Star-K Kosher
Organic - with NPOP/ NOP and EU Scope	Lacon
Good Agricultural Practice Certification	TQ Services Cert limited
NABL Accreditation for testing labs	NABL
Non GMO (Genetically Modified Organism)	NSF International
FAMI QS	Bureau Veritas
GMP PLUS	Schouten Certifications
Fair Trade / Fair For Life certification	Flo-Cert

Source : RIS based on interviews with industry representatives

Export promotion councils have played an important role in supporting export firms to develop their overseas trade and presence by providing technical and industry insights. The AEPC is envisioned to create the necessary communication linkage for industry and policy makers.

Central Sector Schemes offer financial support for market access initiatives by firms

Addressing concerns of the MSMEs, AYUSH entrepreneurs are supported by the 'Central Sector Scheme for Promotion of International Co-operation in AYUSH'¹ both for marketing and registration of products. Firms are also assisted in costs of market authorization/ registration of AYUSH products - with USFDA/ EMEA/ UK-MHRA/ NHPD (Canada)/ TGA, Australia/ New Zealand and other international regulatory agencies, etc as medicines. The facility of reimbursement of expenditure is extended for activities including i. Preparation of product dossier (Excluding office expenses and administrative cost) ii. Fee paid to the concerned regulatory agency for registration/ market authorization of product. iii. 50 percent

of fee paid to reputed international consultant (if any) upto a sum of INR.50 Lakhs.

AYUSH entrepreneurs participating in international exhibitions, trade fairs, road shows etc. with prior approval of the Ministry of AYUSH will be reimbursed 75 percent of the expenditure limited to maximum of INR 3 lakh for participation in Asian & African countries and INR 5 lakh for North & South America, Europe and Australia.

Cost effective WHO GMP (COPP) certificates for international markets by Ministry of AYUSH

Subscription to voluntary standards with global visibility has been an important strategy for international market access. Standard certifications ensure easier access to international markets though manufacturers may incur costs that inhibit export capability especially for MSMEs. Among other standards, a GMP certificate based on WHO guidelines is a widely accepted reference for importing countries globally. Manufacturers however, may incur substantial costs for certification from private voluntary standards. Addressing

this challenge, the Ministry of AYUSH offers for exporters of Ayurvedic drugs, GMP (certificate of pharmaceutical product) COPP for pharmaceutical products as per the WHO guidelines. This is administered under the aegis of the Drug Controller General (India) [DCG (I)]. Joint inspection for this purpose is carried out by the representatives of the DCG (I), Ministry of AYUSH and the concerned State Licensing Authority. As compared to other voluntary standards, the entire process including application for certification, inspection, and certification is free of cost. Till date 40 firms and 1000 products have been issued these certificates.

5.6 Branding Through Traceability

Traceability across the value chain is a demand of global trade regulators and consumers alike

As customers globally become conscious and demanding of information on sourcing of raw materials in food and herbal sectors, medicinal plants and their sourcing are being increasingly subjected to such scrutiny. Traceability tools whether through logistics or through standard certifications are being preferred as a brand story to drive affinity. In trade, traceability allows provision of accurate information to the target market thereby minimizing disruption. Issues in international food safety regulations have become a major source of international trade friction and this impacts AYUSH and allied products. The WTO member countries are encouraged to use international standards, guidelines and recommendations, where they exist. The Sanitary and Phytosanitary Measures (SPS) Agreement, applicable to agriculture, among others, encourages harmonisation on the basis of standards, guidelines and recommendations set by three international organisations, including the Codex Alimentarius Commission, the International Office of Epizootics (OIE), and the relevant international and regional organisations operating within the framework of the International Plant Protection Convention.

Some products of the nutraceutical sector are exported as functional foods and are required to subscribe to Food Chemical Codex (FCC) standards. Though trading partners to bilateral free trade agreements (FTAs) often attempt to resolve specific SPS issues affecting market access in their agreements (Mukherjee et al, 2019) challenges remain. Given that medicinal plant and associated sectors are affected by SPS, most developing countries are however trying to address issues in SPS through subscription to GAP certifications (Mukherjee et al, 2019) . India being a large country with multiple sources of procurement from small and large collectors/cultivators, subscription to GAP/GACP standards has been a challenge. Even then, guidelines on GAP and GACP have been brought out by NMPB and certification bodies like TQ Cert Services do offer certifications to large contract famers.

Development of ISO Standards for AYUSH products

Currently, the ISO is the most important among the voluntary international setting organizations (Mehta and George, 2005). A federation of 123 national standards bodies with more than 250 technical committees split into sub- committees and working groups, it is the most internationally accepted organization. Its standards have considerable trade effects due to their wide use in international trade. While there are no defined ISO standards for AYUSH in ISO, Indian exporters do subscribe to ISO 9001: 2015, ISO 22000: 2018, ISO 45001 and ISO 14001. The Bureau of Indian Standards has initiated AYUSH standardization in ISO with a Working Group (WG-10) on 'Traditional Medicine' with the creation of the ISO/TC-215 'Health Informatics'.

At present, as herbal products, certification costs of AYUSH exports include essential GMP as well as other standards/certificates demanded by importers. These include Halal, Kosher, Organic which may or may not be demanded by importers (Table 5.5) .

Other certifications required could include sustainability standards such as Fair Wild Certification, Rain Forest Alliance and Identity Preserved (IP) certification (for establishing genetic integrity of the natural product). Based on discussions with industry representatives, the total costs of such certifications can be as high as Rs 37, 00,000 per annum. The creation of AYUSH Committee in ISO and formulation of ISO standards for AYUSH is expected to address this challenge. It will create a single reference point for international regulators, greatly enhancing traceability and accessibility in international markets and possibly saving costs of compliance.

Recognition of AYUSH pharmacopoeia abroad is another policy priority for trade facilitation

Besides voluntary standards, market authorization of pharmaceutical and allied herbal products is highly dependent on pharmacopoeial standards accepted in respective markets. Different pharmacopoeial quality standards can result in the need to source different grades of raw materials and repetition of testing of materials and medicinal products to fulfill local requirements. These divergent standards increase complexity in manufacturing and supply chains which in turn can result in increased costs. Given the nature of traditional medicines, acceptance of Indian systems of medicines' phramacopoeias has been specially challenging. Hence efforts for MoUs have been initiated with several countries including the Food and Drug Authority of Indonesia (BPOM). Recently, an MOU has been signed by the Pharmacopoeia Commission for

Indian Medicine & Homeopathy, Ministry of Ayush and American Herbal Pharmacopoeia on 13 Sep 2021. This collaboration is expected facilitate development of monographs along with harmonisation and adoption of standards for Ayurveda products in USA. USA being a major market for AYUSH products, this exercise is likely to have a ripple effect on acceptance of AYUSH in other markets.

Sea ports in some states offer strategic advantage in export facilitation

According to the Ministry of Shipping, around 95 percent of India's trading by volume and 70 percent by value is done through maritime transport (IBEF, 2021) . Sea ports in several states like Gujarat, Maharashtra, Tamil Nadu, Kerala, Andhra Pradesh, Odisha and West Bengal are strategic export facilitators as ocean freight shipping offers industry most competitive freight costs. Efficient utilization of sea ports will result in shorter transportation time of products and cost efficiency for the sector. However, while some ports such as the V. O. Chidambaranar Port (VOCP) (also known as the Tuticorin port), are known to carry significant freight of medicinal plants/extracts/products (Rs 40 crores worth of shipment in 2017), data on use of other seaports for export of AYUSH products is not available yet.

Endnotes

¹ <https://cdn.ayush.gov.in/wp-content/uploads/2021/07/Revised-IC-Scheme-as-on-22nd-June-2021.pdf>

Policy Recommendations

Trade Policy Priorities

Taxonomy for AYUSH products should be on high priority in order to assign national HS lines to specific products, thus, helping in tracking export activities at the product level

Many products of AYUSH nutraceuticals, spices, cosmetics, surgical and panchakarma devices, and food supplements are scattered under different HS Chapters in their respective others category. Export facilitation through reframing/expansion of the HS classification is an important policy intervention required expansion of HS National Lines to incorporate AYUSH products leaving the country under various chapters will offer greater clarity to policy makers and assist in real time monitoring of the sector.

Recognition of AYUSH systems and Indian AYUSH practitioners in abroad

While India exports MAPs to several regions, it is the value addition in the form of extracts and medicaments that will serve the AYUSH sector's interest. Most of these medicaments are exported Nepal and UAE, because these countries recognise the Ayurvedic system of medicine and its practitioners. Therefore, recognition of AYUSH systems abroad is one of the most important policy push to promote

value added product exports of the system. India needs to push for recognition of ISM practice, practitioners, and professional qualifications and pharmacopeia in other countries, to enable our AYUSH doctors to practice in abroad, through structured bilateral and multilateral dialogues.

Promising regions for recognition of ISM practice

Immediate opportunities can be explored in UAE/GCC, Switzerland, ASEAN, SAARC, erstwhile CIS, Russia, BIMSTEC, etc. Cooperation in the field of Traditional Medicine is already a part of India-Africa Union Summit and has found its way in 2015 India-AU summit declaration. It is important to note, India's 2021 presidency, the Ministry of AYUSH hosted a meeting of the BRICS Experts in Traditional Medicines in March 2021. The panel deliberated on harmonisation of TM standards in BRICS nations (PIB, 2021). The Ministry has also proposed an MoU for cooperation in the field of TM and setting up of BRICS Forum on TM (BFTM).

Indian missions abroad may be involved to promote AYUSH system in the world

Indian missions abroad must be utilised for aggressive branding and marketing of AYUSH

systems. Yoga is already popular worldwide with International Yoga Day being celebrated each year on 21st June across the globe. Hence, Yoga can be strategically used as a soft power tool to make headways and get recognition for other ISMs as well. Broader campaigns that connect ISMs with Incredible India brandings can have their base on advantage of ISM medicinal interventions in disorders like those which affect digestion, fever, arthritis, diabetes, immunity, etc., and where there is ample evidence on hand for such classical medicines being of immense advantage to the consumer. All campaigns should encourage visit and advice of an ISM physician. Organisations, such as India Brand Equity Foundation (IBEF), may run these campaigns.

Domestic Policy Imperatives

Organised/Structured Medicinal Plant markets in states

While several major, medium and minor medicinal plant markets are spread across the country, except in few cases, the unorganised market infrastructure may be overhauled to create systematised market places at the region and state levels. In regions like NE, absence of such market places is a challenge for collectors. Transporting raw plants to the nearest markets in Assam or West Bengal results in lower margins and loss of any advantage of post harvest management infrastructure. Organised *mandis* also create a strong linkage with industry value chain establishing the much needed traceability of products demanded in international markets.

Linkage with other Ministries

Cultivated medicinal plants can be included as an agri-produce to be traded through platforms created under the Ministry of Agriculture such as the E-Nam portal. Similarly, sharing of information between National Horticulture Board and NMPB on cultivation of medicinal plants for a uniform database on the sector would greatly address segregated information

communication for stakeholders. Further, under the recently announced Central Sector Scheme for promotion of 10000 new Farmer Producer Organisations (FPOs) inclusion of medicinal plants/producers/organisations and institutions such as NMPB may be established for growth and institutionalisation of the sector.

Strengthen State AYUSH departments

Health being a State Subject, state practices in regulation, management and administration of products and services greatly facilitates growth of the sector. Greater coordination/communication between central and state AYUSH regulatory bodies should be encouraged for strengthening institutions for growth of the sector. State digital AYUSH infrastructure like the E- Aushadhi platforms can be strengthened through handholding as this can have emphatic impact on growth of the sector.

AYUSH clusters/Towns of Excellence

Similar to other products/industries, Towns of Excellence (TEE) Scheme under the DGFT, can be designed for AYUSH clusters/towns. This would help leverage the geographical proximity of enterprises on 'collaborating while competing' principle for attaining participatory, cost effective and critical mass for customization of interventions. For AYUSH, focussed export clusters and towns also offer much required traceability in export destinations.

Standards enforcement

GMP in Drugs and Cosmetics Act, 1940 (Schedule T) should be upgraded on the lines of WHO GMP Guidelines for mandatory standards compliance on the same. The GMP norms prescribed for medicines containing minerals need an immediate overhaul for quality assurance of complete process control. Efforts should also be taken to develop norms for medicine which have minerals and animal bi-products as ingredients. Strong collaboration with ISO for international ISO standards for AYUSH should be taken upon a priority basis.

Annexure 1

State Industrial Policies

State	Policy	Incentives
Uttar Pradesh	Pharmaceutical Industrial Policy 2018 & Industrial Investment and Employment promotion Policy (IIEPP) 2017	<ul style="list-style-type: none"> • Preferential land allotment to AYUSH manufacturers • Incentives for horizontal and vertical pharma parks (interest subsidy for land purchase 50 % for 7 years, for building infrastructure 60 % for 7 years, for common facilities 60% for 7 years. Also 100 % stamp duty exemption for developers) • Incentives for units • subsidy up to 75 per cent for quality certification and clinical trials • SGST reimbursement • stamp duty exemption • electricity duty exemption • mandi fee exemption
Himachal Pradesh	Himachal Pradesh Industrial Investment Policy 2019	<ul style="list-style-type: none"> • Capital infrastructure subsidy up to 40 percent for Herbal Parks
Kerala	Kerala AYUSH Health Policy 2016	<ul style="list-style-type: none"> • subsidy of 10 per cent of capital investment • 100% reimbursement of registration and stamp duty for all AYUSH infrastructure projects
Uttarakhand	Uttarakhand AYUSH Policy 2018 (this includes utilization of MSME Policy 2015, Mega Investment and Industrial Policy 2015 for Ayurvedic manufacturing industries)	<ul style="list-style-type: none"> • Besides the Govt. of India's subsidy of 30% that may capped upto Rs. 5 Crore for each project, state's financial assistance of 10 percent or 1.5 crores to hill districts and Rs 1 crore for plains . • Capital subsidy 15-40 % • Interest subsidy upto 10 % • Stamp duty concession 50-100 %

Chhattisgarh	Industrial Policy 2019-24	<ul style="list-style-type: none"> • High priority industry • Reimbursement of Net State Goods and Services Tax (Net SGST) paid for a period of 9 to 15 years up to 45% to 100 percent of fixed capital investment • Full Electricity duty exemption up to 6 to 10 years from the date of commencement of commercial production • Full stamp duty exemption • Mandi tax exemption for 5 years for upto Rs. 2.00 Crore per year • Project Report Subsidy up to maximum Rs. 2.50 Lakh • 50% exemption from the land diversion fee
Karnataka	Industrial Policy 2020-25	<ul style="list-style-type: none"> • Wellness as a focus sector subject to all incentives under the new Industrial Policy • Under District Industrial Cluster Development Program, Sivamoga (health and wellness cluster) one of the 9 industrial clusters to be developed.
Jammu and Kashmir	AYUSH-Care Investment Policy 2020	<ul style="list-style-type: none"> • 30% Capital Subsidy for Processing Units of Medicinal Plants • 5% of interest subsidy per annum to eligible ventures subject to ceiling of Rs 15 lakhs per year for 5 years. • 100% subsidy on Freight charges maximum upto Rs 30.00 Lakhs per year to AYUSH drugs manufacturing units for transportation of material within the country. • 30% subsidy on Quality control of AYUSH Drugs maximum upto Rs 2.00 Crores and 100% subsidy for quality certification of AYUSH Drugs maximum upto Rs 5.00 Lakhs. • Land Rebate

Annexure 2

Table: List of Companies analyzed

Turnover (INR Crores)	Company List
< 5 cr	Kitex Herbals Ltd., Amrit Herbs Ayurved Pvt. Ltd., Dr. KINRhna Life Sciences Ltd., Aphali Pharmaceuticals Ltd., Ayusri Health Products Ltd., Ocean Lifecare Pvt. Ltd., Ganga Pharmaceuticals Ltd., Harrit Health Care Pvt. Ltd., Chaitanya Pharmaceuticals Pvt. Ltd.
5 cr< 50 cr	Ayurvedant Private Ltd., DeshRakshakAushdhalaya Ltd., ThaikkattuMooss, E T M Oushadhasala (India) Ltd., Dynamic Remedies Pvt. Ltd., Venkateswara, Ayurveda Nilyayam Pvt. Ltd., Unique Pharmaceutical Laboratories Ltd., SolumiksHerbaceuticalsLtd.,Ananta Medicare Ltd., Pharmaveda (India) Pvt. Ltd., A V N Arogya Health Care Ltd., Aura Nutraceuticals Ltd., Source Natural Foods & Herbal Supplements Ltd., Star Health Sciences India Ltd., Ban Labs Pvt. Ltd., Allen Healthcare Co. Ltd., Panjon Ltd., Santulan Impex Pvt. Ltd., Shelter Pharma Ltd., Olive Lifesciences Pvt. Ltd., Deccan Health Care Ltd., Kerala Ayurveda Ltd., Tiaan Consumer Ltd., Sandu Pharmaceuticals Ltd., Surya Herbal Ltd.
50 cr< 250 cr	Maharishi Ayurveda Products Pvt. Ltd., Sanat Products Ltd., Goa Antibiotics & Pharmaceuticals Ltd., Nagarjuna Herbal Concentrates Ltd., Pharmanza Herbal Pvt. Ltd., Arya Vaidya Pharmacy (Coimbatore) Ltd., Sydler Remedies Pvt. Ltd., Ayurvedet Ltd., Indian Medicines Pharmaceuticals Corp. Ltd., Bakson Drugs & Pharmaceuticals Pvt. Ltd., Dey'S Medical Stores Mfg. Ltd., Siddhayu Ayurvedic Research Foundation Pvt. Ltd., Vasu Healthcare Pvt. Ltd., Multani Pharmaceuticals Ltd., Shree Dhootapapeshwar Ltd., Dr. Willmar Schwabe India Pvt. Ltd., V L C CPeINRonan Care Ltd., Cholayil Pvt. Ltd., S B L Pvt. Ltd.
> 250 cr	Amrutanjan Health Care Ltd., Natural Remedies Pvt. Ltd., Arjuna Natural Extracts Ltd., Aimil Pharmaceuticals (India) Ltd., Vicco Products (Bombay) Pvt. Ltd., Emami Frank Ross Ltd., Vidya Herbs Pvt. Ltd., Novartis India Ltd., Shree BaidyanathAyurved Bhawan Pvt. Ltd., Sami-Sabinsa Group Ltd., Bajaj Consumer Care Ltd., Procter & Gamble Health Ltd., Amway India Enterprises Pvt. Ltd., Emami Ltd., Glaxosmithkline Pharmaceuticals Ltd., Colgate-Palmolive (India) Ltd., Dabur India Ltd., Marico Ltd., Patanjali Ayurved Ltd., Lupin Ltd., Hindustan Unilever Ltd.

References

- Absolute Report, 2021. Global Ayurvedic Market Size, Status And Forecast 2021-2027. Absolute Report, UK, published on 19th March, 2021. Online at: <https://www.absolutereports.com/global-ayurvedic-market-17762361>
- Annual Report, 2017-18. Ministry of AYUSH, Government of India
- Annual Report, 2018-19. Ministry of AYUSH, Government of India
- Anup Karan et al.(2016); Size, composition and distribution of human resource for health in India: new estimates using National Sample Survey and Registry data. *BMJ*, Volume 9, Issue 4
- Arsova-Sarafinowska, Zorica and Jakonova Stojanovska, Iskra (2014) Good Manufacturing Practices (GMP) in Homeopathy. In: II International Homeopathic Conference – Gold Standard in Homeopathy, Hacettepe University - Ankara, 11-13 Apr 2014, Hacettepe University, Ankara, Turkey.
- Assocham, 2019. Indian Nutraceutical Industry: Bringing global momentum amid regulatory challenges. Online at: <https://www.sathguru.com/news/2019/09/30/white-paper-on-indian-nutraceuticals-industry-building-global-momentum-amid-regulatory-challenges/>
- Barsh, Russel Lawrence, (2001), “Who Steals Indigenous Knowledge?”, Proceedings of the 95th Annual Meeting of the American Society of International Law, April 4 -7. Centre for Monitoring the Indian Economy
- Bidasaria, P., Bugier, C., Guillermin, S., Moisset, L. and Ramesh, V., 2012. When healing is more than good: Ayurvedic Cluster in Kerala. Lab-centre for competitiveness.
- Bindu Shajan Perappadan (2020); Consumption of ayurvedic medicines/products up during pandemic: Ayush Ministry. *The Hindu - NEW DELHI*, SEPTEMBER 24, 2020.
- BioSphere, 2020. AYUSH Ministry to set up 5 incubation centres in coming months. Online at: <https://www.biospectrumindia.com/news/22/17506/ayush-ministry-to-set-up-5-incubation-centres-in-coming-months.html>
- Business Wire, 2019. The Indian Plant Extract Market, 2019 to 2023 - There has Been a Shift in Universal Trend from Synthetic to Herbal Medicine. Research and Markets. Online at: <https://www.businesswire.com/news/home/20190910005544/en/The-Indian-Plant-Extract-Market-2019-to-2023---There-has-Been-a-Shift-in-Universal-Trend-from-Synthetic-to-Herbal-Medicine---ResearchAndMarkets.com>
- Chaturvedi, S. 2014. Dynamics of Traditional Medicine Industry: Issues in Trade , Technology and Standards in Chaturvedi S, Ladikas M, Lifeng G., and Srinivas K..R.(ed) *The Living Tree: Traditional Medicine and Public Health in China and India* , Academic Foundation , New Delhi . pg-179.
- CII, 2017. Ayurveda industry market size strength and way forward. Confederation of Indian Industries, New Delhi. Online at: <http://ayurvedaindustry.com/pdf/ayurveda-industry-report.pdf>
- Cullet, P (2002). “Amended Patents Act and Access to Medicines after Doha”, *Economic and Political Weekly*, Vol 37 No 24.
- Data Bridge Market Research, 2021. Global Medicinal Herbs Market Insights Report 2021 Worldwide Market Trends & Opportunities to 2028. Online at: <https://www.pharmiweb.com/press-release/2021-01-28/global-medicinal-herbs-market-insights-report-2021-worldwide-market-trends-opportunities-to-2028>
- Editor (2019), Indian ayurvedic market to grow at 10% during 2019 -2024: Tech sci. Research., Pharmabiz. 1st Nov. 2019.
- Fact MR (2020); Medicinal Herbs Market Forecast, Trend Analysis & Competition Tracking - Global Market Insights 2020 to 2030. Fact.MR – April 2020.
- Economic Times; Ayurveda and yoga boosting medical tourism in the country; *Economic Times* - April 17th 2016.
- CII; Ayurveda Services Sector ‘Vision 2022 - Road Map for Indian Ayurveda Industry’; CII and Frost & Sullivan, 2017;
- Export Import Bank of India (1997). “Indian Medicinal Plants: A Sector Study”, Export Import Bank of India, Occasional Paper No 54.
- Farooqi, A A. and Vasundhara, M, (1997), “Medicinal Plants- Wealth for Farmers, Health for all” *Farm Digest*, Oct-Dec 1997,2-11.
- FRLHT (1997) “Medicinal Plants of India: Guidelines for National Policy and Conservation Programmes”, FRLHT, Bangalore.
- FRLHT, 2003. Final Report on Export Potential of Medicinal Plants and Traditional Knowledge Products. A Report for Export Import Bank of India. FRLHT, Bangalore.

- Gidey, M.H., Asfaw, Z., Giday, M., 2016. Value chain analysis of medicinal plants and the associated challenges. *Journal of Medicinal Plant Studies*. Online at: https://www.researchgate.net/publication/301680442_Value_chain_analysis_of_medicinal_plants_and_the_associated_challenges
- Globe Newswire, Intrado, 2021. The global plant extracts market is projected to grow from USD 30.8 billion in 2021 to USD 55.3 billion by 2026, at a CAGR of 6.0% from 2021 to 2026.
- Goraya, G.S. and Ved, D.K., 2017. Medicinal plants in India: an assessment of their demand and supply. Dehradun: Ministry of AYUSH.
- Government of India (2000). Report of the Task Force on Conservation and Sustainable Use of Medicinal Plants, Planning Commission, Govt of India, New Delhi.
- Government of Kerala, Dept. of Ayush, 2016. Kerala Ayush Health Policy,. Online at: https://investuttarakhand.com/themes/backend/acts/act_english1575364449.pdf
- Government of Uttar Pradesh, 2018. Uttar Pradesh Pharmaceutical Policy. Online at: http://invest.up.gov.in/wp-content/themes/investup/pdf/English_UP_Pharmaceutical_Policy.pdf
- Gupta Akshey, (1998), "How Cheap Can a Medicinal Plant Species be?", *Current Science*, 74(7) : 565-566.
- GWI, 2018. Global Wellness Economy Monitor. Global Wellness Institute. Online at: <http://www.globalwellnessinstitute.org/>
- Harilal, M.S., 2009. 'Commercialising Traditional Medicine': Ayurvedic Manufacturing in Kerala. *Economic and Political Weekly*, pp.44-51.
- Hexa Research, 2017. Herbal Medicine Market Size and Forecast, By Product, By Indication, And Trend Analysis, 2014 - 2024. Hexa Research Market Research Report. Online at: <https://www.hexaresearch.com/research-report/global-herbal-medicine-market>
- Heywood, V and H Synge (Eds) (1991). *Conservation of Medicinal Plants*, Cambridge University Press, Cambridge.
- Horticultural Crop Statistics of Karnataka, (2003). State at a Glance (2002-03)
- Humber, J. 2002. The Role of Complementary and Alternative Medicine: Accommodating Pluralism. *Jama-journal of The American Medical Association*.
- Husain, F.A. (1996), "International Trade, Marketing and Consumption of Essential Oils", Paper to Asian Symposium on Industrial Utilization of Medicinal and Aromatic Plants. Bangkok 4-9 November.
- IBEF, 2019. Promotion of AYUSH in Rural Areas. (Indian Business Equity Foundation) Report on AYUSH. ibef.org/news/promotion-of-ayush-in-rural-areas
- IBEF, 2020. High Demand For Medicinal Plants In India. India Brand Equity Forum. Online at: <https://www.ibef.org/blogs/high-demand-for-medicinal-plants-in-india>
- IMARC, 2021. India Ayurvedic Products Market: Industry Trends, Share, Size, Growth, Opportunity and Forecast 2021-2026. IMARC Market Research Company. Online at: <https://www.imarcgroup.com/india-ayurvedic-products-market>
- Insight Slice, 2021. Herbal Medicine Market Size, Share, Sales, Analysis, Forecast By Category. Online at: <https://www.insightslice.com/herbal-medicine-market>
- Jaiswal, Y.S. and Williams, L.L., 2017. A glimpse of Ayurveda–The forgotten history and principles of Indian traditional medicine. *Journal of traditional and complementary medicine*, 7(1), pp.50-53.
- James T.C., (2014) 'Traditional Medicine and Intellectual Property Policies' in Chaturvedi Sachin, Ladikas Miltos, Lifeng Guo, and Srinivas Krishna Ravi (Ed) *The Living Tree – Traditional Medicine and Public Health in China and India*, pg 256.
- James, T. C. and Bhatnagar, A., 2019. Special Wellness Zones for Wellness Tourism: Exploring prospects of creating dedicated ISM hubs, FITM Policy Brief, No 4 https://www.researchgate.net/publication/336057753_Special_Wellness_Zones_for_Wellness_Tourism_Exploring_prospects_of_creating_dedicated_ISM_hubs/link/5d8c6544458515202b690973/download
- James, T. C. and Pathak, N., 2019. Medicinal Plant Cultivation for Poverty Reduction: Prospects and Challenges, FITM Policy Brief, No 3 http://fitm.ris.org.in/sites/default/files/FITM%20Policy%20Brief_3.pdf
- James, T.C. & Bhatnagar, A., 2020. AYUSH Systems and the COVID-19 Epidemic. Forum on Indian Traditional Medicine Policy Brief, Research and Information Systems for Developing Countries. Online at: http://fitm.ris.org.in/sites/default/files/FITM%20Policy%20Brief_7.pdf

- Jayakumar P B, 2014. Old Cure - New Business. Business World, 8th Nov. 2014. Online: <http://www.businessworld.in/article/Old-Cures-New-Business/08-11-2014-74076/>
- John, J. and Chelat, S., 2013. Medical Tourism and Inclusive Growth: Significance of Ayurveda Sector. *Atna Journal of Tourism Studies*, 8(2), pp.19-35.
- Joshi, K., 2008. Indian Herbal Sector. *India Science and Technology*.
- Jyothi Datta (2017); Himalaya to increase raw materials sourced from small, marginal farmers. *Business Standards*. 13th Nov 2017.
- Kamboj, V P (2000). "Herbal Medicine", *Current Science*, Vol 78 No 1, Pp35-39.
- Kumar, M., 2020. New on the banks of Ganga! Herbal Medicine Corridor to generate Rs 5000-crore income for farmers. *Financial Express*. Online at: <https://www.financialexpress.com/lifestyle/health/nirmala-sitharaman-ganga-herbal-medicine-corridor-rs-5000-crore-income-for-farmers/1960095/>
- Kunnathoor, P., 2017. Siddha medicine industry in Tamil Nadu demands complete waiver of GST. *Pharmabiz*. Online at: <http://www.pharmabiz.com/NewsDetails.aspx?aid=102883&sid=1>
- Lalitha, N., 2013. Protecting traditional knowledge in siddha system of medicine.
- Lambert, J, Srivastava, J and N Vietmeyer (1997). "Medicinal Plants: Resurrection of a Global Heritage", *World Bank Technical Paper No 355*, The World Bank, Washington DC.
- Lee Steinbock is a project manager with *Freedonia Custom Research* How to Determine Market Size: 2 Common Methods. 15th March 2018. www.freedoniagroup.com
- Lewington, A. (1993), "A Review of Importation of Medicinal Plants and Plant Extracts into Europe", *WWF International Plant Programme/IUCN*.
- Madhavan, H., 2009, October. Globalising an Alternative Medical Knowledge: Modern and Transnational Ayurveda in Perspective. In *Fourth Global South Workshop at Graduate Institute of International and Development Studies*, Geneva (pp. 19-20).
- Market Study report, 2020. *Global Ayurvedic Market Size, Status and Forecast 2020-2026*. Online at: <https://www.marketstudyreport.com/reports/global-ayurvedic-market-size-status-and-forecast-2020-2026>
- Ministry of AYUSH, 2018. Mid-Term Evaluation of National AYUSH Mission (NAM). Online at: https://namayush.gov.in/sites/all/themes/webcms/images/org_str/Final_evaluation_report.pdf
- Ministry of AYUSH, 2020. Task Force on Expanding Trade Classification, Quality Control and Standardization of Indian Systems of Medicine (ISM) and Herbal Products.
- Mordor Intelligence, 2021. *Ayush and Alternative Medicine Industry in India - Growth, Trends, Covid-19 Impact, and Forecasts (2021 - 2026)*. Online at: <https://www.mordorintelligence.com/industry-reports/ayush-and-alternative-medicine-industry-in-india>
- Mrema Geoffrey C , Rolle Rosa S, 2002. Status of the Post Harvest Sector and its Contribution to Agricultural Development and Economic Development , 9th JIRCAS International Symposium 2002- Value Addition to Agricultural Products https://www.jircas.go.jp/sites/default/files/publication/intlsymp/intlsymp-11_13-20.pdf
- Mukherjee, P.K., Harwansh, R.K., Bahadur, S., Banerjee, S. and Kar, A., 2017. Evidence-Based Validation of Indian Traditional Medicine: Way Forward. In *From Ayurveda To Chinese Medicine* (pp. 137-167).
- Muringatheri, M., 2019. Medicinal plants in good demand. *The Hindu*. Online at: <https://www.thehindu.com/news/national/kerala/medicinal-plants-in-good-demand/article30239519.ece>
- Murphy Halliburton. 2020. Hegemony versus pluralism: Ayurveda and the Movement for Global Mental Health, *Anthropology & Medicine*, DOI: 10.1080/13648470.2020.1785842
- Navdeep, S., Koyal, S. and Singh, G.K., 2011. Establishment of an herbal industry in India. *International Journal of Pharmaceutical & Biological Archives*, 2(4), pp.1011-1019.
- Nidheesh M.K.; Kerala to tap Ayurveda to revive tourism in the state. *Mint* - Sept. 20th 2020.
- NITI Ayog, 2021, *Investment Opportunities in India's Healthcare Sector*. Online at: https://niti.gov.in/sites/default/files/2021-03/InvestmentOpportunities_HealthcareSector_0.pdf
- PIB, 2019. Export of Herbs and Herbal Products. *Press Information Bureau*. Online at: <https://pib.gov.in/PressReleasePage.aspx?PRID=1558955>

- PIB, 2020. Promotion of Herbal Cultivation: outlay of Rs 4,000 crore. Press Release by Ministry of Finance, Press Information Bureau on 15, May, 2020.
- PIB, 2021. Ayush Export Promotion Council. Press Information Bureau, Posted on 15 March, 2021. Online at: <https://pib.gov.in>
- PIB, 2021. International Standards for AYUSH Products. Press Information Bureau. Online at: <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1706099>
- Polaris Market Research, 2020. Herbal Medicine Market Share, Size, Trends, Industry Analysis Report By; By Form; By Source; By Distribution Channel; By Regions, Segments & Forecast, 2020 - 2026. Polaris Market Research. Online at: <https://www.polarismarketresearch.com/industry-analysis/herbal-medicine-market>
- Prasad, R., 2017. Indian Ayurveda vis-a-vis Global Herbal Research. *Journal of Ayurvedic and Herbal Medicine*, 3(3), pp.142-149.
- Rajanandh, M.G. and Chamundeeswari, D., 2017. Need of pharmacovigilance in AYUSH drugs. *Journal of Pharmacovigilance*, 5, p.e166.
- Ravishanker, A, (1992), "Economics of Production and Processing of Davana (*artemesia pallens*) in the eastern dry zone of Karnataka", unpublished, M. Sc (Agri) thesis UAS, Bangalore.
- Remya Lakshmanan & Aarushi Aggarwal (July 2020); *Invigorating Ayurveda in the Times of COVID-19 - India's Position and Investment Opportunities*. Invest India
- Ritupriya., 2013. The status and role of AYUSH and local health traditions in public health. *The Newsletter of the International Institute of Asian Studies*, 65, pp.24-25.
- Rudra, S., Kalra, A., Kumar, A. and Joe, W., 2017. Utilization of alternative systems of medicine as health care services in India: Evidence on AYUSH care from NSS 2014. *PloS one*, 12(5), p.e0176916.
- Ryan Abbott; *Documenting Traditional Medical Knowledge*. WIPO, March 2014.
- Samal, J., 2016. Medicinal plants and related developments in India: A peep into 5-year plans of India. *Indian Journal of Health Sciences and Biomedical Research (KLEU)*, 9(1), p.14.
- Sanjeev Kumar V., *India's spices exports cross \$ 3 billion in 2019-20*. 20th Aug 2020.
- Sen, S. and Chakraborty, R., 2017. Revival, modernization and integration of Indian traditional herbal medicine in clinical practice: Importance, challenges and future. *Journal of traditional and complementary medicine*, 7(2), pp.234-244.
- Sharma, N., 2020. Ayush Ministry ties up with Invest India to set up strategic policy unit. *Live Mint*. Online at: <https://www.livemint.com/news/india/ayush-ministry-ties-up-with-invest-india-to-set-up-strategic-policy-unit-11604242779463.html>
- Sharma, V., Gulati, S., Pandey, A. and Gautam, D.N.S., 2019. Trends in Ayurvedic FMCG Market. *Journal of Young Pharmacists*, 11(2).
- Singh, J. and Mehta, H., *The Study Of Customer Perception Towards Patanjali Ayurveda Limited*. *International Journal of Innovative Research and Advanced Studies (IJIRAS)* Volume 5 Issue 2, February 2018
- Singh, P., Yadav, R.J. & Pandey, A. (2005). Utilization of indigenous systems of medicine & homoeopathy in India. *Indian J. Med Res* 122, Aug 2005, pp137-142.
- Statista, 2017. Distribution of global herbal medicine market 2017 by segment. Online at: <https://www.statista.com/statistics/592366/global-herbal-medicine-market-by-segment-share>
- Statistics MRC, 2017. *Ayurvedic Market Is Expected To Grow at a CAGR Of 16.5% From 2016-2022*. Statistics Market Research Consulting. Online at: <https://www.strategymrc.com/press-details/ayurvedic-market>
- Strategic Policy and Facilitation Bureau" to facilitate systematic growth of AYUSH sector (2020). By Ministry of AYUSH and Invest India 2nd Nov 2020.
- StrategyR, 2021. *Herbal Supplements and Remedies - Global Market Trajectory & Analytics, 2021*, Global Industry Analysts, Inc
- Thakur, S. and Noel, A.S., 2021. A study on growth performance of Ayurveda industries and constraints faced in processing of herbal products in Solan district of Himachal Pradesh.
- Trimble, E.L. and Rajaraman, P., 2017. *Integrating traditional and allopathic medicine: An opportunity to improve global health in cancer*. *JNCI Monographs*, 2017(52).

- Tyler Smith (American Botanical Council) et al. (2019), "US Sales of Herbal Supplements Increase by 8.6% in 2019". Herbalgram. Issue 127 page 54-69.
- Ved, D.K. and Goraya, G.S., 2007. Demand and supply of medicinal plants in India. NMPB, New Delhi & FRLHT, Bangalore, India, 18.
- Viveka Roychowdhary; Back to AYUSH wave. Express Pharma. 16th Oct. 2020.
- White, J.D., O'Keefe, B.R., Sharma, J., Javed, G., Nukala, V., Ganguly, A., Khan, I.A., Kumar, N.B., Mukhtar, H., Pauli, G.F. and Walker, L., 2017. India-United States dialogue on traditional medicine: Toward collaborative research and generation of an evidence base. *Journal of global oncology*, 4, pp.1-10.
- White, J.D., O'Keefe, B.R., Sharma, J., Javed, G., Nukala, V., Ganguly, A., Khan, I.A., Kumar, N.B., Mukhtar, H., Pauli, G.F. and Walker, L., 2017. India-United States dialogue on traditional medicine: Toward collaborative research and generation of an evidence base. *Journal of global oncology*, 4, pp.1-10.
- WHO, 2018. Declaration of Astana, Global Conference on Primary Health Care. World Health Organisation. Online at: <https://apps.who.int/iris/bitstream/handle/10665/328123/WHO-HIS-SDS-2018.61-eng.pdf?sequence=1&isAllowed=y>
- WHO, 2019. WHO Global report on Traditional and Complementary Medicine, 2019. Online at: <https://www.who.int/traditional-complementary-integrative-medicine/who-global-report-on-traditional-and-complementary-medicine-2019.pdf?ua=1>
- World Health Organization, 2013. WHO traditional medicine strategy: 2014-2023. World Health Organization.
- World Health Organization, 2018. Traditional and complementary medicine in primary health care (No. WHO/HIS/SDS/2018.37). World Health Organization.
- World Intellectual Property Organization. (Website: www.wipo.int/)
- Yadav, R. & Mehta, R., 2020. The growing nutraceuticals market in India. Invest India Team Blogs. Online at: <https://www.investindia.gov.in/team-india-blogs/growing-nutraceuticals-market-india>



“

The current situation presents a right time for Ayurveda and traditional medicines to become even more popular globally. There is growing interest in these systems .

”

Shri Narendra Modi

Hon'ble Prime Minister of India

About FITM: The *Forum on Indian Traditional Medicine (FITM)* is a joint initiative by the Ministry of AYUSH and Research and Information Systems for Developing Countries (RIS). The Forum has been established with a broad objective to undertake/commission/promote studies on sociology, economy, political-economy, value chain, trade & investment and international cooperation in traditional medicines; prepare policy and strategy responses on emerging national and global developments; provide critical inputs such as policy briefs, briefings and reports to the Government of India; and to facilitate interactions with experts, stakeholders and policy-makers from India and abroad. It facilitates policy discussions/Consultations and talks by national and international subject experts. FITM also provides fellowships and scholarships for studies in the area of traditional medicines.

About RIS: Research and Information System for Developing Countries (RIS) is a New Delhi-based autonomous policy research institute that specialises in issues related to international economic development, trade, investment and technology. RIS is envisioned as a forum for fostering effective policy dialogue and capacity-building among developing countries on global and regional economic issues.

The focus of the work programme of RIS is to promote South-South Cooperation and collaborate with developing countries in multilateral negotiations in various forums. RIS is engaged across inter-governmental processes of several regional economic cooperation initiatives. Through its intensive network of think tanks, RIS seeks to strengthen policy coherence on international economic issues and the development partnership canvas. For more information about RIS and its work programme, please visit its website: www.ris.org.in



RIS

**Research and Information System
for Developing Countries**

विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

Core IV-B, Fourth Floor, India Habitat Centre, Lodhi Road,
New Delhi-110 003 India., Ph. 91-11-24682177-80
Fax: 91-11-24682173-74, Email: dgoffice@ris.org.in,
Website: www.ris.org.in

Follow us on:



www.facebook.com/risindia



[@RIS_NewDelhi](https://twitter.com/RIS_NewDelhi)



www.youtube.com/RISNewDelhi