



# The Role of Medicinal Plants in the Development of Afghanistan's Economy and Trade

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## Abstract

Securing a favorable place in the global trade market and achieving sustainable economic growth are among the objectives of developing countries. A country's commercial status has significantly improved as a result of increased exports and improved economic conditions brought about by the growth of its domestic output. Medicinal plants (MPs) are a significant and productive part of the economies of the majority of countries, including Afghanistan. Afghanistan has an exceptional capacity for the production and export of MPs and herbal medications because of its unique geopolitical situation and climate. Because of their varied temperatures and geographic locations, the many provinces in the country offer considerable possibilities for the investment, commerce, and cultivation of these species. In addition to receiving basic healthcare, they may create jobs, stop the loss of the green flora so that certain significant wild species can be domesticated, and protect the environment with careful planning in this area. This article's goal is to review the contribution that MPs have made to the country's commerce and economic growth. Based on the results, it can be said that MPs have a multifaceted function in the expansion and growth of the Afghanistan's economy and commerce, and taking this into account, it is possible to understand the significance of these products on the list of significant exports from the Country. MPs are viewed as a potential link between biodiversity preservation, accessible healthcare, and sustainable economic growth.

**Keywords:** Medicinal Plants; Economic Growth and Development; Domestication of Wild Plants; Trade; Afghanistan

**Abbreviations:** WHO: World Health Organization; MPs: Medicinal Plants; TM: Traditional Medicine; GDP: Gross Domestic Product; GIDs: Gastrointestinal Disorders; CVDs: Cardiovascular Diseases; MAIL: Ministry of Agriculture, Irrigation and Livestock.

## Introduction

One of the goals of developing countries is to achieve sustainable economic growth, and identification of the

factors affecting this phenomenon is very important in this regard. Finding a country's assets and building on them to secure a favorable position in the global trade scene is one of the fundamental strategies for assigning an active role and strengthening this position in the process of economic globalization.

The country's commercial situation has greatly improved as a result of the growth of domestic production, which has also improved the economy and led to an increase in exports.

This speaks to the significance that natural resources and agriculture play in providing a favorable framework for the growth of exports and motivates officials and other stakeholders to aggressively pursue adequate plans in this area. The World Health Organization's (WHO) emphasis on substituting natural products for chemical substances and the global trend towards the use of medicinal plants (MPs) have drawn increased attention to, and investment in, the mass production and cultivation of MPs at industrial levels, as well as their use in the food, health, and pharmaceutical industries [1,2]. According to studies, the value of the MPs market worldwide is estimated to be around \$100 billion annually, and by 2050, it will reach \$5 trillion [3,4].

These natural reserves can be regarded as the greatest national wealth for any agricultural country [5]. The significance of MPs and the introduction of their crucial role in advancing national, regional, and global goals to achieve health, environmental protection, medical self-sufficiency, job creation, and economic development are evident [6]. Due to their unique benefits in a variety of medical, veterinary, and scientific domains for the prevention and treatment of different illnesses, as well as their shown efficacy, lower cost, less adverse effects, and environmental friendliness, MPs are being used more frequently. The authorities in the fields of cultivation, exploitation, standardization, and quality improvement must pay close attention to the use of the aforementioned resources as raw and intermediate materials, final preparations and products, or in the various pharmaceutical, cosmetic, and food industries.

### **The Role of Medicinal Plants in the Economic and Commercial Development of the World**

MPs have played a significant role in the evolution of various civilizations throughout history, and their use has been traditional and widespread from antiquity to the present. Traditional medicine (TM) is the primary source of healthcare for about 70% of people living in underdeveloped countries [7,8]. Similarly, developed countries partially depend on MPs for their pharmaceutical products [9,10]. According to estimates, 18% of the 150 most commonly given medications and 25% of contemporary medications are herbal [6]. China and India are two of the largest international players in this sector among the Asian countries, and Asian MPs contribute over 50% of worldwide TM revenue and 45% of total exports [11].

Asia is home to over 38,660 species of MPs, of which about 78 plant species have achieved commercial significance. Asia is one of the world's major centers of biological resources [12]. Many Asian countries, including Bangladesh, China, India, Nepal, Pakistan, Myanmar, and Indonesia, have made MPs cultivation a significant industry. However, future

research and political interventions related to the production and commercialization of MPs and their contribution to the domestic and national economy of Asian countries are unclear [12].

Even though the MPs industry is seen as a promising one and a significant driver of economic growth, the amount of MPs exported remains modest. The market for MPs is raising worldwide, providing supplier countries with plenty of opportunities to increase their exports abroad. According to reports in the 1990s, the yearly volume of the global commerce in medicinal herbal materials was estimated to be 400,000 metric tons, valued at 1.2 billion dollars. In 1991, the WHO estimated that the market for herbal medicines in European countries was valued at approximately 6 billion dollars, with Germany accounting for 3 billion, France for 1.6 billion, Italy for 0.6 billion, and other countries for 0.8 billion. With the US contributing \$4 billion, India \$1 billion, and other countries \$5 billion, the market value reached over \$10 billion in 1996. By 1997, it had climbed to almost \$7.0 billion for Europe alone, with Germany accounting for 50% of this total. Between 2015 and 2013, the global market for herbal goods and medications grew to a total value of 23 billion, 24 billion, and 25 billion dollars, respectively. This amount has increased to 35.4 billion dollars in 2020 while taking into account the compound annual growth rate of 6.6% from 2015 to 2020 [3].

Since Afghanistan, along with other Asian and developing countries, raises a higher percentage of its needs by relying on domestic products, including MPs, this review paper has discussed the importance of the mentioned resources in the growth of the country's economy and trade. The purpose of this research is to review the role of MPs in the development of Afghanistan's economy and trade.

### **Medicinal Plants: A Fresh Breath for the Development of Afghanistan's Economy and Trade**

The majority of countries in the world, including Afghanistan, rely heavily on the contributions made by MPs to their economies [13]. Afghanistan has an exceptional capacity for the production and export of MPs and herbal medicines due to its unique geo climatic conditions and four distinct seasons. Many provinces in the country have a lot of potential for MPs cultivation, investment, and trade. With careful planning in this area, it is possible to not only meet the needs for basic healthcare and environmental preservation, but also to create jobs and stop the destruction of the green carpet [14].

Afghanistan is a landlocked country with mountains and a diverse flora, of which roughly 30% are endemic. The

development and expansion of the country's economic and commercial standing are significantly influenced by these resources. Based on the facts and reports that are now accessible, the most significant components of the country's gross domestic product (GDP) are agricultural and livestock. Approximately 85% of Afghanistan's population works as farmers [15]. Just 1/8 of the country's land is arable, despite the fact that agricultural items account for the majority of its domestic production.

The dependence of Afghanistan's economy on agricultural income, the affectability of income from complex political and commercial issues, the instability of Afghanistan's commercial relations, unpredictable climatic conditions, the absence of laboratories equipped with the modern tools and equipment needed to process domestic products, the lack of sufficient budget to invest for the improvement of domestic production, etc., is among the effective factors in the vulnerability of the country's economy. One of the approaches to deal with these challenges is to develop solutions not only improve the state of the domestic economy, but also increase the number of country's export items.

Given the multifaceted role that MPs have played in the expansion and development of Afghanistan's economy and trade, it is easy to see why these goods rank highly among the country's most important exports. According to Srivastava J, et al [16] MPs are viewed as a potential link between inexpensive healthcare, biodiversity preservation, and sustainable economic development.

### **Medicinal Plants as Important Sources of National Income**

One of the Asian countries with a long history of utilizing TM and MPs for the prevention and treatment of a range of illnesses is Afghanistan [17-19]. In addition to inspiring and motivating officials to boost the cultivation of the desired MPs, the widespread use of traditional herbal preparations and products by individuals from various regions, especially rural residents also makes it possible to improve the export of these goods.

Moreover, a significant income can be attained by implementing suitable and thorough programs for the teaching of the country's traditional ancestral medicine ideas. India, for instance, is among the countries that receives substantial annual revenue from the training of Ayurvedic medicine to visitors from all over the world. In this regard, India can serve as a model for Afghanistan. In 1995, it was projected that the Indian medicinal plant sector brought in \$250 million US dollars annually. The Chemexcil report states that the combined export value of Greek and Ayurvedic medicines in 1999-2000 was approximately \$41.6 million

dollars.

African countries are another noteworthy example, as TM plays a significant role in African culture and, as a result of limited access to contemporary medical care, over 80% of Africans, particularly those in South Africa, rely on TM and herbal products for primary healthcare. Twenty thousand tons of medicinal herbal ingredients, valued at around sixty million US dollars, are traded nationally in South Africa. The TM industry in Zambia is valued at almost 43 million dollars annually. Likewise, herbal medicine is widely used in the majority of Latin American countries. According to Oyeboode O, et al & Abdullahi AA [20,21], between 70 and 80 percent of Latin Americans, including those in Ecuador, rely on TM, MPs, or plant-derived products to address their health needs.

### **Medicinal Plants as the Main Resources for the Country's Economic Self-sufficiency**

The employment of various MPs by both domestic and foreign producers in the food, cosmetic, and pharmaceutical industries can provide as a crucial foundation for enhancing and preserving the economic infrastructure. When it comes to endemic MPs, this matter is more crucial. As starting a number of related scientific research projects could be a useful business strategy. Roughly 5000 flowering plants have been identified in Afghanistan, with about 30% of them being endemic, according to studies conducted by German experts, Clark K [22]. According to this statistic, it can be said that Afghanistan possesses enormous plant reserves, including MPs, and that properly utilizing them contributes to increasing local production, creating jobs, and achieving economic self-sufficiency. Based on the findings of the study carried out in Bhutan, it is evident that MPs have been crucial in boosting farmers' incomes, enhancing their economy, and improving their standard of living. They have also been important in protecting biodiversity, offering the general public access to basic traditional health care, and promoting the rich cultural diversity of the country [23].

### **Medicinal Plants as the Main Export Items of the Country**

Exports constitute about 20% of the country's GDP, and carpets (45% of total exports), dried fruits (31% of total exports) and MPs (12% of total exports) are considered among the country's main export items. The majority of these commodities are exported to China, Turkey, Saudi Arabia, Iraq, Iran, India, Pakistan, and so on.

Most of the MPs from Afghanistan are shipped to produce pharmaceuticals. As per the latest government data, MPs ranked as the country's third most important export

item in 2018, following carpets and Qaraqol. "Afghanistan has exported MPs worth 110 million dollars this year, and the majority of these items have been exported to India" according to the Ministry of Industry and Trade (Ministry of Agriculture, Irrigation and Livestock [24].

Based on data from the UN's COMTRADE database, Afghanistan earned approximately 475.18 thousand US dollars in 2019 from exporting MPs used in the pharmaceutical industry, perfumery, and insecticide products to Iran (NA, Afghanistan Exports of plants for pharmacy, perfume, insecticides to Iran) [25]. According to the Kandahar Chamber of Commerce and Industry report, the province earned 308 million dollars in 2022 from the shipment of more than 113 thousand tons of MPs and dry fruits [26].

The Ministry of Agriculture, Irrigation and Livestock (MAIL) released numbers for 2019 showing that Afghanistan exported MPs worth 145,302,179 US dollars. With a value of 999, 630, 00 US dollars, Asafoetida was the most valuable MP exported. Similarly, liquorice makes up the largest share of the MP market; officials claim that Afghanistan made \$54 million from the shipment of 20 thousand tons of liquorice last year. The same figures show that 733, 647, 343 Afghanis were exported overall this year, with a significant portion coming from the export of MPs. Furthermore, ¼ of all exports from the country are allegedly made up of MPs [27].

As per the officials of the chambers of commerce and industry, the export of herbs and MPs has increased significantly this year and brought more than 144 million dollars of income to the country. It's been said that about 25% of Afghanistan's exports are MPs and spices. The aforementioned authorities include saffron, cumin, and liquorice as some of this sector's top export commodities. Afghanistan has sold more than 32,000 tons of MPs to foreign markets this year, according to ACCI figures [28].

### **Cultivation of Medicinal Plants as a Step to Increase Employment Opportunities**

According to the findings of a study carried out in seven villages in Kalat, Iran, growing MPs significantly increases employment and lowers poverty levels in the studied areas. Thus, as compared to other agricultural crops, the average number of employment created by the cultivation of MPs per hectare is 103.1% more. In this way, diversifying economic endeavors through the growth of MPs contributes significantly to enhancing employment prospects and enhancing family welfare [29]. A statement from the Ministry of Agriculture's publications states that in 2019, over 4000 hectares of land were devoted to the production of MPs in order to boost their exports overseas. Thus, expanding

MPs cultivation can be seen as a promising action toward enhancing employment opportunities and contributing to the country's overall income (Ministry of Agriculture, Irrigation and Livestock).

### **Medicinal Plants as Important Resources in Maintaining Public Health**

By preserving and enhancing the community's health, MPs can contribute to the growth of the country's GDP. This link, which has both direct and indirect applications, supports regional, national, and local economic self-sufficiency as well as health [30].

### **Cultivation and Domestication of the Country's Medicinal Plants**

The pharmaceutical industry requires plant bioactive compounds in such large quantities that natural resources are unable to provide the demand. The country's wild plants have not been able to meet the increasing demand for MPs. However, some significant plants should be domesticated in order to address the non-observance of these plants' reproductive and hereditary characteristics during collection by non-professional and unskilled people. A number of fundamental guidelines must be followed in order to preserve the quality of MPs and the quantity of bioactive substances. These guidelines include selecting elite species, varieties, seed, and cuttings carefully, as well as using the right tools and cultivation techniques to prepare the soil, light, water, and other elements. Apart from resolving certain issues, domesticating MPs offers the subsequent benefits and prospects:

- The employment of scientific and contemporary breeding procedures, mechanized agriculture, and the planting of modified seeds will make it easier to obtain a plentiful supply of high-quality medicinal raw materials.
- Scientific research can be developed to improve MPs.
- The presence of processing facilities adjacent to the fields can sometimes be advantageous to extract the bioactive compounds of MPs, minimize the cost of transportation, and lower the risk of herbal material degradation.
- Taking the required steps, such as growing plants asexually (by utilizing modified seeds) and sexually (by employing subterranean and aerobic plant parts, such as those found in marshmallow, Nepal yam, liquorice, and mint).
- Using hybridization and other genetic techniques to enhance the wild MPs' adaptability to their surroundings.
- Using efficient farming practices, including as enhancing MPs and eliminating weeds and pests.

## Below are Some Medicinal Plants of the Country that Require Domestication

Local Name	Scientific Name	Plant Family	Distribution	Usage in Folkloric Medicine
Kalpoora, Spirkay	<i>Aerva javanica</i> (Burm. f) Schult	Amaranthaceae	Kandahar, Herat	Gastrointestinal disorders (GIDs)
Boy madaran, Drawna, Zawal	<i>Achillea santolina</i> L.	Asteraceae	Many parts of the country	Analgesic, antipyretic and GIDs
Hom, Bandak, Maadraq, Madraq	<i>Ephedra</i> sp.	Ephedraceae	Herat, Badakhshan, Panjshir, Logar, Kabul, Hazarajat	Asthma
Golbakhor, Buzbash	<i>Nepeta laevigata</i> (D. Don) Hand, -Mazz	Lamiaceae	Dry and high lands (altitude 2500 meters)	Chest pain, GIDs
Kakoti, Podina-e-kohi	<i>Ziziphora afghanica</i> Rech. f.	Lamiaceae	High slopes (3000 meters)	GIDs
Katira, Katirah	<i>Astragalus gummifer</i> Labill.	Fabaceae	Farah and Herat dry areas	Expectorant, emolient, laxative, hair fashion
Turanjabin, Shotorkhar	<i>Alhagi sparsifolia</i> Labill.	Fabaceae	Dry and plain areas	Cardiovascular diseases (CVDs) and GIDs
Shirin boya	<i>Glycyrrhiza glabra</i> L.	Fabaceae	Altitudes 2500-600 meters	Cough treatment, pulmonary diseases and GIDs especially gastritis
Shir khesht, Zaban gonjeshk	<i>Fraxinus oxyphylla</i> M. Bieb. Ex Willd.	Oleaceae	Steppe or plains (heights 100-1200 meters)	GIDs
Datura, Qatela	<i>Datura stramonium</i> L.	Solanaceae	All parts of the country except eastern parts	Asthma, Abdominal pains
Panirband	<i>Withania coagulans</i> (Stocks) Dunal	Solanaceae	Eastern parts of the country (600-800m height)	Severe body aches and immune-strengthen
Anjadan, Hing, Anghoza	<i>Ferula assa-foetida</i> L.	Apiaceae	Hazarajat, Maimana, Baghlan, Badakhshan	Worm control, Severe aches, nervous and menstrual problems
Gol-e-gaz, Gaz	<i>Tamarix galica</i> L., <i>T. articulata</i> L.	Tamariaceae	Different regions of the country, mostly by streams and rivers	Wounds and skin infections
Seresh, Seech	<i>Eremurus stenophyllus</i> (Boiss & Buhse) Baker	Xanthorhoeaceae	Dry areas and highlands and plains	Emolient, laxative, glue

**Table 1:** Some Medicinal Plants of Afghanistan, which require domestication.

Afghanistan has the capacity and potential to produce large amounts of MPs, but it hasn't been able to establish a suitable position in the MPs trade on the international scene. Apart from various internal concerns, the primary challenges the country faces regarding the trade in MPs are the inadequate processing, standardization, and packaging of MPs and herbal products; the absence of branding; the unidentified nature of the country's herbal products; the sale of raw drugs; and the existence of MPs without a valid certification in

medicinal plant shops (Attaris). Additionally, there is a lack of timely monitoring of the status of MPs and herbal products inside the Attaris; the illegal export of MPs to neighboring countries; a lack of appropriate marketing strategies; lack of public awareness about the importance of MPs and their use as firewood and fuel materials, lack of proper knowledge of producers and consumers about MPs, etc [31,32].

## Major Medicinal Plants that Constitute Important Export Items of Afghanistan

The five groups that comprise Afghanistan's primary

export commodities are flowers, seeds, roots, leaves, and gums. The number of significant MPs that are often found on the country's export item list is shown below.

Local Name	Scientific Name	Plant Family	Parts Used
Shirin Boya	<i>Glycyrrhiza glabra</i> L.	Fabaceae	Underground parts
Zira-e-sabz	<i>Cuminum cyminum</i> L.	Apiaceae	Fruit
Zaffaran	<i>Crocus sativus</i> L.	Liliaceae	Stigmas
Hing	<i>Ferula assafoetida</i> L.	Apiaceae	Oleo gum resin
Onab	<i>Ziziphus vulgaris</i> Lam.	Rhamnaceae	Fruit
Zira-e-sia	<i>Carum carvi</i> L.	Apiaceae	Fruit
Reshqua	<i>Medicago sativa</i> L.	Fabaceae	Seeds
Shabdar	<i>Trifolium pratens</i> L.	Fabaceae	Seeds
Gashniz	<i>Coriandrum sativum</i> L.	Apiaceae	Fruit
Koknar	<i>Papaver somniferum</i> L.	Papaveraceae	Latex, Capsule
Jawani	<i>Carum copticum</i> L.	Apiaceae	Fruit
Raziana	<i>Foeniculum vulgare</i> Mill.	Apiaceae	Fruit
Sia dana	<i>Nigella sativa</i> L.	Ranunculaceae	Seeds
Shaqaqol	<i>Asparagus adscendens</i> (Roxb.) Kunth	Asparagaceae	Root and Seeds
Drawnj	<i>Doronicum pardalianches</i> L.	Asteraceae	Root
Yarlang	<i>Alkanna tinctoria</i> (L.) Taush.	Boraginaceae	Root
Seresh-e-kahi	<i>Eremurus stenophyllus</i> (Boiss & Buhse) Baker	Xanthorhoeaceae	Flowers
Khakshir	- <i>Sisymbrium sophia</i> (L.) Webb ex Prantl, - <i>Descurainia sophia</i> L.	Brassicaceae	Seeds

**Table 2:** List of Major Exported Medicinal Plants of Afghanistan [8,23].

## Conclusion

The development of the domestic production of a country while improving the economic situation has led to an increase in the amount of exports and thus the commercial situation of the country improves significantly. Increased interest in, funding for, and usage of MPs in the food, health, and pharmaceutical industries have resulted from the global trend toward their use as well as the WHO's emphasis on substituting natural substances for chemical ones. These natural reserves can be viewed as the greatest national wealth for any agricultural country. The significance of MPs and introducing their crucial role in advancing national, regional, and global goals to achieve health, environmental protection, pharmaceutical self-sufficiency, job creation, and economic development is evident. Due to their unique benefits in a variety of medical, veterinary, and scientific domains for the prevention and treatment of different illnesses, as well as their shown efficacy, affordable cost, few adverse effects,

and environmental friendliness, MPs are being used more frequently. MPs are crucial to the economies of the majority of countries in the globe, including Afghanistan.

This country has an exceptional capacity for the production and export of MPs and herbal spices due to its unique geopolitical environment, climate conditions, and four distinct seasons. Afghanistan is a landlocked, mountainous country with a rich flora of MPs, including over 30% endemic plants. These resources are important to the country's development and progress in terms of its economic and commercial standing. It is now extremely difficult or even impossible to extract the bioactive compounds of MPs from nature to meet the needs of the pharmaceutical companies. However, actual steps must be taken at the national level to support and domesticate a few valuable plants because non-professional and unskilled collectors have failed to observe the MPs' reproductive and genetic traits.

## Recommendations

- Farmers should be encouraged and trained to increase the cultivation of MPs
- The government should completely promote MPs cultivation nationwide.
- The domestication and cultivation of wild plants, which are still regarded as export goods and are widely utilized in the country's TM, should receive special attention.
- National academic authorities and pertinent institutes should be involved in scientific investigations on the systematic diagnosis of MPs (e.g., Kabul University's Faculty of Pharmacy).
- Pharmacognostic researches on the country's MPs should be prioritized.
- TM, as the essence of country's medical culture and the center for promoting the use of MPs in the treatment of diseases, should be comprehensively studied and researched.
- Effective measures should be taken to create factories and centers for the preliminary processing of MPs inside the country and to provide the basis for the export of raw and processed medicinal herbal materials, and the development of medicine and pharmacy towards the modern methods of the present time can be institutionalized.

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