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Role of Regulatory Policies and Benefits for Herbal Medicine Development in Vietnam

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ABSTRACT

Medicinal plant products make new treatment trends among patients compared to conventional medicines and those seeking holistic modalities for health and wellness. In Vietnam, legislative controls on herbal medicine were established by national laws and governmental regulations through the direct management of the Ministry of Health which aims to include herbal medicine use in the national health care system. This paper aims to review the regulatory policies on the country's production, registration, promotion, and use of herbal medicines. Current policies provide measures to regulate, implement, and monitor herbal medicines from production to consumption stages. However, improvements based on provisions from international standards can be adopted to guarantee efficacy and safety for public use. Policies are still lacking regarding the implications of long-term effects; and on potential interactions with other food and drugs. There is also a need to strengthen studies on the environmental determinants influencing the effectiveness of herbal products.

Key words: regulatory policies, Benefit, alternative medicine, development, Vietnam

1. INTRODUCTION

For the past three decades, around 80% of the world's population has relied on herbal products for primary health care [1]. Herbal medicines are becoming increasingly popular

among patients because they are well-tolerated and do not exert severe side effects. Plant-based drugs are reported to be successfully used to cure skin diseases, tuberculosis, diabetes, jaundice, hypertension, mental disorders, cancer, AIDS, and many other infectious diseases. Countries with ancient civilizations like India, China, South America, and Egypt use several plant-based remedies to treat such ailments [2-4].

The global herbal medicine market was estimated at approximately \$230.03 billion in 2021 and is projected to reach \$430.05 billion by 2028, with a compound annual growth rate (CAGR) of 11.32%. The global market for beauty products from herbs was valued at \$64.7 billion in 2020 and could grow to \$117.3 billion by 2027. The market for herbal dietary supplements was valued at \$48.1 billion in 2022 and is expected to increase to \$87.98 billion by 2030. Furthermore, medicinal herbs are also used as raw materials for producing various products in the agricultural industry, such as veterinary drugs, plant protection agents, and animal feed - a highly potential market for increasing the value chain of medicinal herbs [8, 9]. Thus, the global market for medicinal herbs and herbal products is very large, presenting an opportunity to focus on cultivating and developing medicinal herbs in Vietnam into an industry and participating in the international herbal market.

Traditional and folk medicines have had a profound impact in Vietnam, becoming a mainstream medical practice, though it has been slowly phasing out, in the country and coexisting with modern Western medicine [5]. Such medicines are developed due to the biodiversity in Vietnam. Biodiversity in Vietnam ranks 16th in the world with over 36,000 species of plants, animals, algae, and microorganisms, including many rare and endemic species [6]. With a history of more than 4,000 years in forming and developing various ethnic groups, Vietnam has accumulated many cultural, economic, and social values. Especially, Vietnam has a large resource of medicinal plants with many rare and endemic species. In addition, the pharmaceutical industry is also one of the important sectors of the Vietnamese economy because it contributes to ensuring the health of people and workers, thereby supporting other sectors and fields to fulfill their missions.

Traditional Vietnamese medicine and medicinal herbs have been formed and developed up to the present day, recording the use of 5,117 species belonging to 1,823 genera of 362 plant families that have value in treating diseases and caring for, as well as protecting, people's health among the 13,766 plant species recorded in Vietnam. Many valuable and rare endemic plant species are both effective in treating diseases and have high economic value, widely distributed throughout the country, such as: Ngọc Linh ginseng (*Panax vietnamensis*), Lai Châu ginseng (*Panax pseudoginseng*), seven-leaf-one-flower (*Gynostemma pentaphyllum*), goldthread orchid (*Dendrobium chrysanthum*), lily (*Lilium* sp.), red pine (*Pinus kesiya*), bitter yellow wood (*Hopea odorata*), Chinese goldthread (*Coptis chinensis*), turmeric root (*Curcuma longa*), lime tree (*Citrus aurantifolia*), etc...[7].

The scale of the Vietnamese pharmaceutical industry reached approximately 6.4 billion USD by 2020, achieving a compound annual growth rate (CAGR) of 6% during the period from 2018 to 2020. The growth rate of the pharmaceutical industry in 2020 slowed compared to previous years due to tightened infection control measures in hospitals and a decline in workers' incomes due to reduced business activities. The pharmaceutical manufacturing and business system expanded with around 250 manufacturing plants, 200 import-export facilities, 4,300 wholesalers, and more than 62,000 retailers. The import of medicinal materials accounted for a very high proportion, with the herbal supplement market valued at 48.1 billion USD in 2022. The herbal supplement market is projected to increase to 87.98 billion USD by 2030. In addition

to being fragmented in the market, the pharmaceutical industry also faces a significant limitation, as domestically produced medicines only meet about 47% of demand.

Vietnam's pharmaceutical imports exceeded 3.3 billion USD in 2020, with a compound annual growth rate of about 9% from 2018 to 2020. Antibiotics remain the leading pharmaceutical group in terms of value, currently accounting for approximately 48.5% of the total pharmaceutical import value. The main sources of imported drugs are countries such as France, Germany, India, the United States, Italy, South Korea, and Belgium. The above situation is largely due to the small scale and limited capabilities, which affect the level of innovation and manufacturing capabilities, leading to pharmaceutical products produced by companies in Vietnam primarily being simple formulations, functional foods, and generic drugs (medications that have expired patent protection) to address common medical conditions. The substantial importation of foreign medications may lead to issues regarding counterfeit drugs, low-quality medicines, and high drug prices due to monopoly mechanisms and the freedom of pricing by importing companies.

This leads to safety in health and life, financial security, and peace of mind for people when participating in medical examinations and treatment. In addition to importing many foreign drugs, the pharmaceutical industry also has to import a large amount of medicinal herbs from abroad. The proportion of imported medicinal herbs from foreign countries accounts for a very high percentage, up to 80%-90%. Of which, the amount of raw materials imported from India and China accounts for up to 85% of the total value of raw material imports. With the global trend towards natural products, medicinal herbs are used as raw materials to produce various health-related products such as medications, health supplements, cosmetic products, functional foods, and herbal beverages. The demand for medicinal herbs and products derived from them for health care and protection is increasing day by day. The total market size of medicinal herbs, herbal medicines, and health supplements from herbs in Vietnam in 2020 was estimated to exceed 1 billion USD.

Despite Vietnam's diverse range of medicinal herbs, the import of medicinal herbs still accounts for a high proportion over many years. This is because cultivation techniques, processing techniques, and extraction of medicinal herbs have not been implemented rigorously or adequately invested in. The heavy reliance on a limited number of markets for raw materials also limits the supply of finished pharmaceutical products, leading to increased production costs and subsequently higher drug prices on the market. Due to the heavy reliance on raw materials, products made from medicinal herbs only meet about 50% of market demand according to statistics. Additionally, exported products also have very modest value. Furthermore, the excessive dependence on imported medicinal herbs, coupled with inadequate strict management, also leads to the possibility that imported herbs may be of poor quality or substandard.

Despite this, Vietnam has a very large resource of medicinal plants with many rare and valuable endemic species [10]. The increasing market demand for herbal medicines, both nationally and internationally, presents a need for strategizing the production, consumption, and regulation of herbal products in the country. Although there have been many policies and strategies related to the development of medicinal plants, there are still some limitations. This requires an inspection of current policies and regulations related to herbal medicine use, the health implications of herbal medicine products, and recommended measures to ensure that herbal medicines play a crucial component in the country's socio-economic development. This article, therefore, aims to review regulatory policies on herbal medicines in Vietnam.

It also gives a background of studies on the health implications of government-recommended medicinal plants (from which various products are derived). Finally, a synthesis of how herbal medicine regulations and their health implications could play a role in Vietnam's overall development agenda is discussed.

2. ANALYSIS OF KEY POLICIES IMPLEMENTED TO PROMOTE THE CULTIVATION AND RESEARCH OF MEDICINAL PLANTS

The Party's resolutions defined the main tasks and solutions for the development of medicinal plants, such as having specific policies for rare medicinal herbs, prioritizing investment in specialized cultivation areas, forming production, preservation, and processing link chains, enhancing quality control of imported medicinal materials, and gradually reducing dependence on foreign medicinal sources.

Resolution No 20-NQ/TW on the Strengthening and enhancing people's health protection in new situations dated October 25th 2017 by the Central Committee of the Communist Party issued after the Sixth Plenary Meeting of the Central Committee of the XII Party Congress and identified the main tasks and solutions for the development of medicinal plants: having specific policies for the development of medicinal materials, especially rare ones; prioritizing investment and focusing on developing specialized cultivation areas, forming connection chains in the production, preservation, and processing of medicinal materials; enhancing quality control of imported medicinal materials; and gradually reducing dependence on foreign sources. Resolution No 81/2023/NQ-QH15 on the National overall planning during 2021 – 2030 and vision to 2050 dated January 1st 2023 by the National Assembly identified the expansion areas for growing medicinal plants and the development of medicinal materials linked to the processing industry in the Central Highlands, midlands, and northern mountainous regions as one of the development orientations and spatial distribution for important sectors.

The Vietnamese government has implemented several key policies aimed at enhancing the cultivation and research of medicinal plants, acknowledging their significance in healthcare and economic development. Many mechanisms have been introduced to encourage investment in the medicinal herbs sector, including investment incentives in agriculture and rural areas; specific policies on seeds, capital, and technology; and preferential credit policies with low interest rates and long loan terms. Decree No. 65/2017/NĐ-CP on the Special policies on seedling, capital and technology for the development, cultivation and exploitation of medicinal plants dated May 19th 2017 by Prime Minister was a specific policy on seeds, capital, and technology for the development of medicinal herb cultivation and exploitation; it provides preferential credit for investment loans, supporting the development of regions growing valuable medicinal herbs with loans of up to 96 billion VND, a maximum loan term of 10 years, and a preferential interest rate of 3.96% per year.

Decree No. 57/2018/NĐ-CP on the Policies of investment encouragement for cultivation, production, and use of medicinal plants dated April 17th 2018 by the Prime Minister issued various mechanisms and policies to encourage investment in cultivation, processing, production, and use to leverage advantages and develop the medicinal herb industry: cultivating medicinal plants included in the investment incentive list in policies encouraging businesses to invest in agriculture and rural areas. The Prime Minister issued the overall planning for the development of medicinal herbs until 2020 with a vision to 2030 (Decision No. 1976/QĐ-TTg

on the dated October 10th 2013 by Prime Minister); the program for the development of traditional medicine, combining traditional medicine with modern medicine until 2030 (Decision No. 1893/QĐ-TTg on the Development program for traditional and modern medicines till 2030 dated December 25th 2019 by Prime Minister); and the program for the development of the pharmaceutical industry and domestic medicinal herbs production until 2030, with a vision to 2045 (Decision No. 376/QĐ-TTg on the Development program for national pharmaceutical and herbal medicines till 2030 dated March 17th 2021 by Prime Minister), which set the goals: increasing the percentage of domestically cultivated medicinal herbs, encouraging the cultivation of medicinal herbs to meet good farming practices, harvesting according to the standards of the World Health Organization; gradually reducing the percentage of imported medicinal herbs and traditional medicines; developing domestic medicinal herbs and products from domestic medicinal sources into high-quality, high-value commodity production with competitive strength in both domestic and international markets. Initiatives such as the National Program on Development of Medicinal Plants emphasize research and cultivation through financial incentives and capacity-building for local farmers, fostering a robust supply chain for herbal medicines (Decision No. 1165/QĐ-TTg on the National Strategy for Vietnamese Pharmaceutical Industry Development till 2030 and vision to 2024 dated October 10th 2023 by Prime Minister).

For the first time, the development of medicinal herbs has received attention and investment from the state budget, with credit policies through the National Target Program for Socio-Economic Development of Ethnic Minority and Mountainous Areas for the period 2021 - 2030. The goal is to initially form a value chain system for the development of valuable medicinal herbs in ethnic minority and mountainous regions, contributing to stable income growth for ethnic minorities and reducing the percentage of sustainably poor households (Decision No. 1719/QĐ-TTg on the National aim program for socio-economic development of minority and mountain areas during 2021 – 2030, stage I: from 2021 to 2025 by Prime Minister). In Phase I from 2021 to 2025, investment support for the development of valuable medicinal herb cultivation areas will be piloted in 21 provinces with 22 district points, including 18 projects for developing valuable medicinal herb cultivation areas and 4 projects for centers for breeding, conservation, and development of medicinal herbs using high technology. Furthermore, the government has sought to integrate community-based approaches, where upland ethnic minority farmers are encouraged to engage in cash-cropping of medicinal plants, thereby promoting sustainable livelihoods while simultaneously preserving traditional knowledge. These policies have aimed to balance modern agricultural practices with the rich cultural heritage of local communities, enhancing the socio-economic dynamics in rural regions. As a result, there is a growing recognition of the importance of medicinal plants not only in traditional medicine but also in promoting biodiversity and ecological sustainability. Specifically, Circular No. 55/2023/TT-BTC on the Regulation on management, use and payment of national funds for national aim programs during 2021-2025 issued by the Ministry of Finance regulates the management, use, and settlement of funding from the state budget for implementing national target programs during the period 2021-2025, including expenditures to support the development of valuable medicinal herb cultivation areas.

At the level of provincial localities, many local policies and mechanisms have been established to encourage investment in the development of medicinal herbs; these mechanisms promote and encourage economic sectors to invest in the cultivation, preliminary processing, and preservation of domestic medicinal herbs through rural development projects and the One

Commune One Product (OCOP) program (Decision No. 919/QĐ-TTg on the Programme for One Commune One Product (OCOP) during 2021 - 2025 dated August 8th 2022 by Prime Minister). However, the investment resources remain very limited. Most products are largely self-sufficient at the local level due to fragmented, spontaneous methods that lack regional linkage, value chain connection, and especially market information on the international stage. One good example was the development of medicinal plants in Dak Nong province. Dak Nong Provincial Party Committee issued Program No. 39-CT/TU on Working program in 2022 dated December 31st 2021 by the Permanent Office of Provincial Communist Party (Program No. 39-CT/TU on Working program in 2022 dated December 31st 2021 by Permanent Office of Provincial Communist Party), including the content of developing medicinal plants in the province. To effectively restructure the agricultural industry, Decision No. 1390/QĐ-UBND on the Re-structuration Programme of Agricultural sector for added values enhancement, climate change mitigation and sustainable development. dated September 6th, 2018 by the Chairman of Dak Nong Province People Committee, approving the Plan to Restructure the Agricultural Industry towards increasing added value, adapting to climate change, and sustainable development in Dak Nong Province.

This decision aims to develop the medicinal plant industry in the province by 2030, focusing on creating high-potential areas for medicinal plants in the districts of Cu Jut, Dak Glong, and Dak R'Lap by cultivating various medicinal plants such as gac, ginger, white lemongrass, eleuthero, turmeric, red perilla, lemongrass, Ngoc Linh ginseng, and other plants. As a result of this decision, the province has maximized its potential for medicinal plants under forest canopies. Currently, several forest ownership units are cultivating, developing, and harvesting medicinal plants through sustainable forest management plans, including five units: Dak Tung Forest Protection and Development One Member Limited Company with an area of 18,221.97 hectares. Dak N'Tao One Member Limited Company with an area of 12,207.02 hectares. Dak Wil One Member Limited Company with an area of 28,869.34 hectares. Dak Nam Tay Nguyen One Member Limited Company with an area of 24,744.76 hectares. M'Oak Forest Protection and Development Unit with an area of 6,567.69 hectares. The Provincial People's Committee has also established a plan for biodiversity conservation in Dak Nong Province (Decision No. 2118/QĐ-UBND on the Programme for Conservation and Development of Medicinal Plants in Dak Nong Province till 2030 dated December 21st, 2018 by the Chairman of Dak Nong Province People Committee, approving the tasks of the Project for the Conservation and Development of Medicinal Plants in Dak Nong Province until 2030).

This plan prioritizes the integration of the conservation and development of medicinal plants with the allocation of funding for its implementation. It emphasizes the execution of scientific and technological tasks to support the development of medicinal plants, as well as research and collection of effective herbal remedies from local medicinal plants, in tandem with enhancing information and communication efforts to educate the community about the conservation and development of medicinal resources in the province. Under the directive of the Provincial Party Committee, the Provincial People's Committee has developed and issued this plan. Decision No. 2314/QĐ-UBND on the Programme for Conservation and Development of Medicinal Plants in Dak Nong Province till 2025 dated December 12th, 2021 by the Chairman of Dak Nong Province People Committee. Based on this decision, the project clearly outlines the objectives for the development, management, exploitation, and utilization of medicinal plant resources, both cultivated and natural, in the province. The goal is to serve the purposes of healthcare and economic development in the medicinal plant sector, with a

particular emphasis on the conservation and development of rare and valuable medicinal plants in the province. The project identified 26 types of medicinal plants with potential for exploitation, 71 types that require conservation, and 12 types that are suitable for cultivation and development in Dak Nong. With these policies and mechanisms in place, the Dak Glong district has planned to build a medicinal plant processing factory on an area of approximately 5 hectares in Quang Son Commune. Medicinal plants are mainly grown in Dak Ha and Quang Son Communes, covering an area of about 70 hectares, with an annual output of over 161 tons. The main types of medicinal plants grown in the district included *Abelmoschus sagittifolius*, *Angelica sinensis*, *Callerya speciosa*, and *Curcuma longa*.

The Dak Mil district has incorporated the development of medicinal plants into its high-tech agricultural development plan. The local people have developed medicinal plants such as ginger, *Curcuma longa*, *Cymbopogon*, and *Polyscias fruticosa* into commercial products with economic value. These plants are grown in combination with coffee and under the canopy of rubber trees, ensuring stability, sustainability, and harmony, while increasing income for locals without affecting the local advantage crops. The area of medicinal plants grown in combination with other crops is approximately 20 hectares. The Krong No District has developed 516 hectares of medicinal plants from 2018 to 2022, with a total output of 10,320 tons. The district has grown various types of medicinal plants, including *Ocimum gratissimum*, *Crinum asiaticum* L., *Clerodendrum fragrans* Vent., *Sansevieria trifasciata*, *Abelmoschus sagittifolius*, *Moringa oleifera* Lamk., *Piper betle* L., *Piper sarmentosum*, and others. The Cu Jut district has grown approximately 47 hectares of medicinal plants, with an estimated output of over 290 tons. The main types of medicinal plants grown in the district included Ginger, *Curcuma longa*, *Cymbopogon*, *Cochinchinensis*, and *Polyscias fruticosa*. The Gia Nghia city has developed several types of medicinal plants, including *Cochinchinensis*, Ginger, *Curcuma longa*, and *Polyscias fruticosa*. The city has also implemented two models for the cultivation of medicinal mushrooms, including *Ophiocordyceps sinensis* and *Ganoderma lucidum*, which have brought high economic efficiency.

3. INVESTMENT IN RESEARCH AND DEVELOPMENT

Following the Decree 06/2019/ND-CP of the Government of Vietnam on the management of endangered, precious, and rare forest plants and animals and implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora in 2019, the government has invested in building a gene conservation network and centers for researching medicinal plant varieties across the country. Vietnam is gradually establishing a gene conservation network and research centers for medicinal plants throughout various ecological regions. The Plant Resources Centre (PRC) was founded in 1986 to preserve around 1,000 accessions collected across the Red River Delta. Currently, 1,531 gene sources of 884 medicinal plant species have been preserved, including many rare species at risk of extinction, endemic species, and economically valuable species, located in 7 medicinal plant gardens in the Red River Delta (Hanoi), Northern Midland (Tam Dao), Northern Highlands (Lao Cai), North Central Coast (Thanh Hoa), Central Highlands (Da Lat), South Central Coast (Phu Yen), and Southeast (Ho Chi Minh City)[11].

Numerous studies have been conducted to develop and issue technical processes for cultivating, caring for, and processing medicinal plants, assessing gene quality, and selecting

new medicinal plant varieties [12, 13]. Over 150 technical processes for cultivating, caring for, and processing 40 medicinal plant species have been developed and issued for organizations and individuals to reference [14]. The quality of gene sources has been assessed, resulting in the selection of 74 new medicinal plant varieties. Cultivating medicinal herbs that meet the principles and standards of Good Agricultural and Collection Practices (GACP) set by the World Health Organization has received initial investment attention, with 76 cultivation areas certified by the Ministry of Health [15, 16].

The cultivation of medicinal plants according to the Good Agricultural and Collection Practices for Medicinal Plants (GACP-WHO) has also received significant investment. The total area designated for medicinal plant development is 357,178 hectares, of which 220,178 hectares is cultivated on land designated for forestry and under forest canopies; 137,000 hectares is cultivated on agricultural land, including both perennial and annual crops. A total of 150 different species of cultivated medicinal plants have been developed. In the Northwest region, there are 46,181 hectares, including 57 species, primarily consisting of cinnamon (10,312 hectares), cardamom (6,543.7 hectares), and *Illicium verum/ Docynia indica* (14,634 hectares).

The Northeast region has a cultivated area of 270,565 hectares with 59 species, where the main crops are cinnamon (160,207 hectares), *Illicium verum* (59,525 hectares), cardamom (16,155 hectares), *Morinda officinalis* (2,936 hectares), and *Amomum xanthioides* (2,630 hectares). The Central Highlands region has an area of 13,330 hectares for medicinal plants, comprising 24 species, with key crops being turmeric (2,894 hectares), Ngoc Linh ginseng (1,750 hectares), ginger (1,179 hectares), and *Cymbopogon nardus* (1,161 hectares). However, investment in the application of scientific and technological advancements, cultivation, and processing to meet international standards remains limited. Domestic medicinal products lack competitiveness due to insufficient investment in research to demonstrate safety and efficacy. Businesses in the medicinal herb sector tend to be small-scale, with weak competitiveness, limited investment in international market research, and a lack of participation in the global herbal supply chain, making it difficult to establish a Vietnamese herbal brand internationally.

4. CHALLENGES AND SOLUTIONS

Despite numerous supportive policies, limitations remain, such as limited investment resources, small-scale production, lack of regional and value chain linkage, lack of international market information, and insufficient application of scientific and technological advancements, resulting in a lack of competitiveness for products. To address these issues, solutions such as merging companies to increase scale, collaborating with foreign partners, expanding clean raw material cultivation areas, investing in modern machinery and experts, upgrading factories to international standards, and improving distribution chains while applying 4.0 technology are essential.

Focusing on developing large-scale specialized cultivation areas, forming linkages in the production, preservation, and processing of medicinal herbs to meet international standards, enhancing research on international market demands, promoting trade, and building the Vietnamese medicinal herb brand internationally are also crucial. Some suggestions are proposed to establish development directions for medicinal plants in draft laws, develop medicinal herb regions, and clarify investment policies to promote the development of

medicinal herbs. Ensuring traceability is also vital for sustainable medicinal herb development. To develop the medicinal herb industry in Vietnam robustly, the author suggests the following solutions:

The first solution is to merge herbal medicine companies: To quickly increase scale, it is essential to negotiate mergers between several herbal medicinal enterprises to form a few large-scale herbal groups. Merging herbal medicinal companies will enhance financial potential, leverage existing infrastructure, cultivation areas, and technology, and utilize the existing operational network. Additionally, with a safe financial structure and low debt ratio for most pharmaceutical companies, after the merger process, they can increase capital through debt financing. With high-profit margins and low debt ratios, companies should consider borrowing more to leverage financial benefits to enhance the return on equity. Financial resources from borrowing can help pharmaceutical companies invest in new technologies, recruit industry experts, and develop product research and medicinal herb cultivation projects to enhance business efficiency.

The second solution is to establish partnerships with foreign counterparts: To quickly increase total capital and assets while leveraging their production technology capabilities and experiences to create a foundation for developing companies in the medicinal herb sector.

The third solution is to expand activities: The herbal medicinal groups should expand clean raw material cultivation areas, standardize, and invest in modern machinery and high-level specialists related to the processing and production of medicinal herbs to deliver truly safe, quality, and effective products to consumers.

The fourth solution is to build production facilities following international standards: Vietnamese herbal medicinal companies should focus on upgrading factories to meet higher standards, such as EU-GMP, PIC/S, Japan-GMP. Additionally, retail pharmaceutical chains should actively improve distribution channels, expand product consumption networks, and effectively apply 4.0 technology in operations.

In addition, to develop the medicinal herb industry and products from domestic medicinal sources into a high-quality, high-value commodity production sector with competitive strength in both domestic and international markets, it is necessary to focus on investing in large-scale specialized cultivation areas and forming linkages in the production, preservation, and processing of medicinal herbs that meet standards for origin and quality according to market demands, especially for the international market. Strengthening research on international market demands, promoting trade, and building the Vietnamese medicinal herb brand internationally is also essential. Effectively implementing investment resources from the state budget and preferential credit policies for supporting the development of valuable medicinal herb cultivation areas under the National Target Program for Socio-Economic Development of Ethnic Minority and Mountainous Areas for the period 2021-2030 is crucial.

5. CONCLUSION

The Vietnamese government plays a pivotal role in fostering the development of medicinal plants and products. Through strategic initiatives that promote sustainable cultivation and harvesting practices, the government seeks to balance ecological preservation with the

demand for traditional medicine. However, challenges such as limited investment resources, small-scale production, and lack of regional and value chain linkage hinder progress, necessitating stronger solutions. Furthermore, understanding consumer behaviors is crucial for successful conservation efforts and the promotion of medicinal products. Therefore, a multi-faceted approach that involves the government, local communities, and conservation organizations will be essential for nurturing this sector. By addressing these complexities, Vietnam can harness its rich biodiversity to develop a sustainable economy while preserving its invaluable traditional knowledge of medicinal plants.

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