

# THE SOLUTION TO DEVELOP MEDICINAL HERBS VALUE CHAIN IN QUANG NINH

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## **Abstract**

*The article analyzes the practice of developing the medicinal herbs value chain, assessing the current status of the medicinal value chain development in Quang Ninh province. The situation of growing medicinal herbs; organizing the production of medicinal herbs; processing, distribution and marketing of medicinal products in Quang Ninh province have been studied meticulously. Factors influencing the development of the medicinal plants value chain in Quang Ninh province are evaluated, from which the author proposes solutions to develop the medicinal plant value chain based on the principle of ensuring that the views and development goals of medicinal plants value chain in Quang Ninh province are practical, feasible and systematic. For the locality: The research results are the scientific basis to help policy makers have a more comprehensive view of the management of agricultural production development project programs in the value chain; contribute to raising the income of workers directly involved in agricultural production.*

*sMedicinal herbs, medicinal value chain, development solutions, herbal medicine in Quang Ninh province.*

## **1. Introduction**

Medicinal herbs are one of many crops in the agricultural sector. The organization of production in the value chain, in accordance with the current policy of the Party and State on agricultural development is very necessary and pressing. Quang Ninh is a province with rich and diversified vegetation such as: Indian mulberry, Golden Camellia, Star Anise, Cinnamon, Betel leaf, *Stephania rotunda* Lour, Malaysian Ginseng, Japanese honeysuckle,... However, the development of these medicinal plants production in Quang Ninh is not yet commensurate with the potentials and strengths for many different reasons such as: the exploitation of medicinal plant resources is still spontaneous, not paying attention to regeneration and conservation. Many medicinal plants are in danger of exhaustion; Medicinal materials are mainly at the stage of fresh raw materials. The locals are not paying much attention to the preliminary processing, refined processing, creating different products, in order to increase their value. With its strong potential in natural, socio-economic, especially natural conditions, Quang Ninh can develop medicinal plants to become one of the important sources of income, in order to exploit its strengths in nature and a number of specialities, to develop into a major medicinal center in Vietnam.

## 2. Method

Research on the value chain of medicinal plants in Quang Ninh province, the current status of pharmaceutical production development in the province. On that basis, proposing solutions to develop the value chain of medicinal plants in Quang Ninh province to 2025 and beyond.

\* The object of research is the value chain and value chain development of medicinal plants in Quang Ninh province.

\* Scope of the study: The research topic is in Quang Ninh province, focusing on surveying 8 districts and cities of the province that are cultivated and exploiting natural medicinal herbs from 2013 to present.

\* Research Methods:

About the research methodology: The author combines qualitative and quantitative research methods with different approaches, together with analytical criteria that comprehensively assessed the value chain for a specific medicinal plant.

\* Specific research objectives:

- Evaluate the current status of developing the value chain of medicinal plants in Quang Ninh province.

- Analysis of factors affecting the development of the value chain of medicinal plants in Quang Ninh province.

- Proposing solutions to develop the value chain of medicinal plants in Quang Ninh province.

\* Research question

- Research question 1: What is the development of pharmaceutical production in Quang Ninh province in recent years (especially from 2013 to now)?

- Research question 2: People directly produce and trade in pharmaceuticals; What recommendations should the State management agencies at district and village levels, the departments of the province and the People's Committee of Quang Ninh province implement to develop the value chain of medicinal herbs in the province in the upcoming time?

## 3. Results

### ***3.1. Current situation of developing pharmaceutical production in Quang Ninh province***

#### *3.1.1. The situation of growing medicinal herbs in Quang Ninh province*

Quang Ninh is considered as one of the provinces with favorable climatic conditions that soil is suitable for the development of medicinal plants, especially valuable medicinal herbs with high economic value such as Indian mulberry, Golden Camellia, Star Anise, Cinnamon, Japanese honeysuckle ... According to statistics, Quang Ninh province currently

has 948 medicinal plant species belonging to 182 families, 561 different genera (of which: 134 species are planted, 814 species grow naturally)<sup>79</sup>. This biological system of diverse medicinal plants is an important prerequisite for Quang Ninh to develop medicinal herbs to serve people's lives, to meet the needs of medicinal production and to contribute to socio-economic development of the province. Taking advantage of endowed natural resources, advantages of the diversity of medicinal plant ecosystems, Quang Ninh province has actively investigated and planned medicinal plants in the province recently, which focus on key contents such as: Forming a conservation area, developing concentrated medicinal plants in Yen Tu national medicinal plant garden and Ngoa Van - Yen Tu green medicinal herbs valley, applying public scientific achievements in the cultivation and processing of medicinal plants, forming the product value chain and brand name of Quang Ninh medicinal herbs<sup>80</sup>. Along with investment activities for the development of the pharmaceutical industry, Quang Ninh province continues to attract investment, creating conditions for policies and legal corridors for enterprises to invest in the development of production and processing of medicinal herbs. Then, linking 4 factors in medicinal development (State - Farmer - Scientist - Entrepreneur), Quang Ninh would become a pharmaceutical center of the Northeast region and the whole country.

In recent years, there have been a number of investors participating in the development of medicinal herbs to create many products that have a foothold in the market to improve the economic efficiency of the business and decrease the number of unemployed people in disadvantaged, remote and isolated areas of the province. Some models of growing medicinal plants includes:

- Secoin Joint Stock Company has invested in an area of more than 180 hectares in Binh Khe and Trang Luong (Dong Trieu). The company allocates 40 hectares to establish a center for conservation and development of medicinal herbs, 70 hectares specialized in growing and developing medicinal plants. In 2013, the Company signed contracts with the people, planted 75 hectares of turmeric, and obtained more than 1,500 tons of fresh turmeric. In addition, the Company conducts trial planting of many types of medicinal herbs, thereby selecting some plants that are suitable for natural conditions in Trang Luong, Binh Khe such as Ming Aralia, Rehmannia Glutinosa, Japanese honeysuckle, Yam, Chamberbitter, Pink Striped Trumpet Lily, ...

- Dong Bac Pharmaceutical Planting, Manufacturing and Processing Co., Ltd. has more than 30 hectares of medicinal plants in Cong Hoa Village (Cam Pha). Some medicinal plants planted by the company such as Purple Indian mulberry (9 hectares), Yam (2

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79 Gooch et al (2009), "Marketing and quality control of fresh grapes, fresh and processed apples and many other fruits of Ontario, Canada".

80 People's Committee of Quang Ninh province (2012), Program on establishing and developing brands for agricultural products of Quang Ninh province to 2015, Issued together with Decision No. 273 / QD-UBND dated February 13/2012 by the People's Committee of Quang Ninh province.

hectares), Five-leaf ginseng (2 hectares), transferred to the farmers 1 ha of Five-leaf ginseng, Australian cowplant, Chamberbitter, *Solanum procumbens*. The company signs a contract to plant medicinal plants with the cooperative in Yen Thanh village, Tien Yen district for processing materials.

- Dong Son Green Technology Joint Stock Company has 125 hectares of medicinal plant cultivation in Dong Son (Hoanh Bo), including Indian Mulberry (90 hectares), *Ardisia sylvestris* (1 hectare), Ming Arelia, and Golden Camellia; Transferring planting techniques to farmers in Dong Son, Ky Thuong, Tan Dan.

-Toan Dan Cooperative (Ba Che) has more than 1,100 ha of forest land, including 50 hectares of Purple Indian Mulberry grown in cell culture, 03 hectares of Sand Ginger Each stem of Indian Mulberry could harvest from 1.5 to 3 kg of fresh tuber/3 years. The average selling price is about 120,000 VND per kilogram of fresh Indian Mulberry, 750,000 VND per kilogram of dried Indian Mulberry. Compared with the wild Indian Mulberry, this price is much lower so that in the market, many people take advantage of consumers' lack of knowledge to overprice, which does not correctly reflect the real value of the goods.

- Ba Che Forestry Sole Member Limited Company planted 11.5 hectares of Indian Mulberry.

- The medicinal plant area of Dong Son Green Technology Joint Stock Company; Quang La Farm Cooperative (Hoanh Bo District) planted *Ganoderma lucidum*; Tung Lam Joint Stock Company has cooperated with DK Pharma Company, Hanoi University of Pharmacy to build Yen Tu medicinal plant garden, ...

In addition, households also participate in growing medicinal plants such as Star Anise, Cinnamon in Binh Lieu, Ba Che, and Mong Cai; Indian Mulberry, Dandelion, *Desmodium styracifolium*, Gac fruit, Japanese Honeysuckle, Sand Ginger, Ming Arelia, ... at Mong Cai, Tien Yen, Hoanh Bo, Ba Che, Uong Bi.

However, the cultivation and development of medicinal plants still faces many difficulties in techniques of cultivation, taking care and harvest. Medicinal materials have not been standardized (according to GMP-WHO) and poor yields create a lot of difficulties for the product to participate in the market, which leads to many unsold or low priced medicinal herbs.

Following the direction of the Provincial Party Committee and Provincial People's Committee, during 2015 - 2017, Ba Che district has supported more than 1.1 billion VND for 174 households participating in the projects of planting Golden Camellia. Thanks to that, Ba Che became the largest area planting Golden Camellia in the province with more than 140 hectares, concentrating in some villages such as: Thanh Son, Don Dac and Dap Thanh. It includes 50 hectares for harvested camellia and over 60 hectares for harvesting leaves (because the leaves are pre-harvested compared to flowers). In 2018, the district extended

100 hectares of Golden Camellia<sup>81</sup>.

The government of Quang Ninh province has properly paid attention to the cooperation of 4 factors (State - Farmer - Scientist - Entrepreneur) in the development of medicinal herbs value chain. Recently, businesses have actively invested in facilities for preliminary treatment, pharmaceutical processing, production of products from medicinal herbs, with an increasingly large scale of investment such as: Secoin Joint Stock Company; Ba Che Forestry Sole Member Limited Company; Quang Duong Joint Stock Company, Cong Hoa Village (Cam Pha); Dong Bac Pharmaceutical Planting, Manufacturing and Processing Co., Ltd.; Tinh Hoa Green Agro-Pharmaceutical Cooperative; Dong Trieu Green Medicinal Cooperative, Dap Thanh Forest Products Joint Stock Company ... In 2015, Pharmaceutical Joint Stock Company and Medical supplies Quang Ninh has completed the investment in manufacturing drugs and functional foods from medicinal herbs. They are now producing more than 30 products that meet the World Health Organization's (GMP-WHO) drug manufacturing standards. This is an important nucleus for the development of the pharmaceutical industry, functional foods from medicinal herbs in Quang Ninh province in the upcoming years.<sup>82</sup>

### *3.1.2. The situation of pharmaceutical production in Quang Ninh province*

Recently, the production of medicinal herbs in Quang Ninh province is organized in two forms:

(i) Primary production: There are 14 economic organizations engaged in primary production. They are now growing 35 species of medicinal plants composed of 14 species by businesses and 21 species by households. Most of the farming households having suitable soil for medicinal plants use that strength to grow medicinal plants. But the number of other households boldly changing the main crop from rice to medicinal plants are rising now. However, they do not know how to process and preserve, and do not sign contracts for the consumption of raw materials for processing enterprises, which make them unable to sell products, limiting the expansion of acreage. Finally, some households have to switch back to growing rice.

(ii) Secondary production: There are 18 economic organizations engaged in secondary production to create groups of products such as: packaged medicinal herbs, essential oils, tea bags, and tablets.

Pharmaceutical products and medicinal products produced by economic organizations in both primary and secondary forms are distributed right on the premises,

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81 Quang Ninh Provincial People's Committee (2014), Policies to encourage the development of agricultural production concentrated in Quang Ninh province, in the period of 2014 - 2016, Issued together with Decision No. 2901 / QD-UBND December 5, 2014 of the People's Committee of Quang Ninh province

82 People's Committee of Quang Ninh province (2013), Project "Quang Ninh Province - One commune One product (OCOP) for the period 2013-2016", Issued together with Decision No. 2870 / QD-UBND dated October 22, 2013 of the People's Committee of Quang Ninh province.

participating in fairs, a few enterprises product introduction goods, agents inside and outside the province. However, the distribution and marketing activities of enterprises are still very limited and passive. Currently, in the province, there is no economic organization specializing in the distribution of medicinal herbs and medicinal products but mainly combined with many other products.<sup>83</sup>

On February 27, 2015, the Prime Minister approved a project to develop medicinal plants associated with hunger eradication, poverty reduction, and new rural construction. Accordingly, there will be 8 natural exploitation regions and 8 areas planned for concentrated medicinal cultivation. Northern midland and mountainous region, including Bac Giang, Yen Bai, Quang Ninh, Lang Son, developed and planted 16 species of medicinal herbs, namely 13 indigenous species (Indian Mulberry, Ming Arelia, Sand Ginger, Gac, Five-leaf Ginseng, Oriental Motherwort, Desmodium Styracifolium, Star Anise, Cinnamon, Lemongrass, Amomum Longiligulare, Sweet Wormwood, Adlay) and 3 imported species (Dahurian angelica, Atractylodes, Rehmannia Glutinosa) on an area of 4,600 hectares. The project prioritizes the development of species of Indian Mulberry, Gac, and Sand Ginger along with sustainably maintaining and exploiting Cinnamon and Star Anise on the existing area. Until now, Quang Ninh is one of the potential locations to become a centralized pharmaceutical development center of the Northeast.

### *3.1.3. The situation of processing, distributing and marketing pharmaceutical products in Quang Ninh province*

#### *3.1.3.1. The situation of pharmaceutical processing*

Most naturally cultivated and harvested medicinal materials are subjected to preliminary treatment locally by using manual equipment, with low value-added, and no specific quality standards. A few establishments already have machinery and equipment in the preliminary processing and processing of medicinal herbs, creating a number of medicinal products with high value-added such as: Golden Camellia tea, Indian Mulberry Glue, Moringa tea and Cleistocalyx operculatus tea (raw tea or tea bag) ...

The program (OCOP) has established or supported many economic organizations to apply technology to produce a number of herbal products and participate in the value chain of herbal production in the province, such as:

- Dong Bac Pharmaceutical Plantation, Production and Processing Co., Ltd. is producing a number of products: Five-leaf Ginseng Tea bags, Chamberbitter tea bags, Five-leaf Ginseng Soft Glue and has already provided to the market: Dong Bac liver detox tablets, Dong Bac diabetes tablets, ...

- Dong Trieu Green Medicinal Cooperative: Indian Mulberry Glue, Golden Camellia

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83 People's Committee of Quang Ninh province (2013), Project "Quang Ninh Province - One commune One product (OCOP) for the period 2013-2016", Issued together with Decision No. 2870 / QD-UBND dated October 22, 2013 of the People's Committee of Quang Ninh province.

Glue, ...

- Yen Tu Herbal Cooperative: Yen Tu Betel Oil Massage ...
- DTFopro Joint Stock Company: Golden Camellia tea bags, Golden Camellia flower
- Giac Thanh Forest Products Trading Joint Stock Company: Dried Golden Camellia flower, Golden Camellia tea bags.

Till the production of pharmaceutical products participating in the OCOP Program, it has stimulated the producers to form sub-regions of medicinal plant cultivation, production and processing in areas in the province such as Trang Luong village, Dong Trieu town), Thuong Yen Cong, Uong Bi City, Dap Thanh village, Ba Che district ... These areas are considered as nuclei to spread to neighboring farmers to convert ineffective crops to plant medicinal plants in accordance with the natural conditions of the region and the economic conditions of the household.<sup>84</sup>

#### *3.1.3.2. Distribution and marketing of pharmaceutical products*

The distribution and marketing of medicinal herbs and medicinal products in localities are limited. Raw materials are mainly sold "in batches" to local collectors (or elsewhere), often at low value. The products from medicinal herbs are mainly sold on the spot (manufacturing facilities), customers come to buy in person or call to order. In the province, there are a number of companies distributing pharmaceuticals and products from medicinal herbs, but most of them import products from other places for distribution and marketing in Quang Ninh.

Many local herbal products have been gradually known by consumers inside and outside the province. The supporting activities of the OCOP program such as technical consultancy, fairs, exhibitions, radio, television, press promotion, connecting partners, ... have had a very good impact on the organizations and individuals who manufacture medicinal herbs and medicinal products. This will improve their distribution and marketing capacity to gradually actively distribute, thereby actively developing growing areas and developing production. From being a pioneer in implementing the program for each commune and ward, up to now, the success of the program has been considered as a pilot model for nationwide replication. Many localities in the country go to Quang Ninh to learn their experiences, which is a good opportunity to promote products to other localities. Many medicinal products are interested by consumers: Liver detoxifier, Five-leaf ginseng tea, Moringa tea, Golden Camellia ....<sup>85</sup>

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84 People's Committee of Quang Ninh province (2013), Project "Quang Ninh Province - One commune One product (OCOP) for the period 2013-2016", Issued together with Decision No. 2870 / QD-UBND dated October 22, 2013 of the People's Committee of Quang Ninh province.

85 Quang Ninh Provincial People's Committee (2015), Product Evaluation and Classification Criteria Set of Quang Ninh Provincial Program One commune One product", Issued together with Decision No. 3479 / QD-UBND dated November 05 2015 of the People's Committee of Quang Ninh province.

### **3.2. Value chain analysis of medicinal plants in Quang Ninh province**

#### *3.2.1. Value chain analysis of medicinal plants in Quang Ninh province*

Through the field survey, as well as the analysis of the production of medicinal herbs, the author determined that the production of medicinal herbs in the value chain in Quang Ninh has not yet developed. There are many medicinal species, but in Quang Ninh, two types of medicinal herbs that are of interest to the people as well as businesses and have formed a value chain are Indian Mulberry and Golden Camellia. The author focuses on economic analysis of the value chains of these two medicinal herbs to have a basis for proposing the development of value chains for other medicinal plants.

#### Value chain map of medicinal plants in Quang Ninh province

On the basis of practical research in Quang Ninh, the author focuses on analyzing the medicinal value chain of Golden Camellia and Indian Mulberry, including: (1) Planting and harvesting activities, (2) Raw material collectors; (3) Processing activities; (4) Product distribution.

There are many types of medicinal herbs in Quang Ninh, but there are two types of medicinal herbs that have formed the chain that is the value chain of Golden Camellia and Indian Mulberry, which are two types of medicinal herbs identified by Quang Ninh as key products in OCOP program. The factors participating in the Golden Camellia and Indian Mulberry product chain include: Producers (growers and collectors from nature); Fresh product collectors, Fresh produce handlers; Consumers of dry products (post processed include wholesalers and retailers).

#### *3.2.2. Analysis of factors affecting the development of the medicinal value chain in Quang Ninh province*

##### *3.2.2.1. Macro factors*

##### Policies to support local chain production<sup>86</sup>

- Land policy: The Provincial People's Committee has had a policy to support plantation. Support level does not exceed 6 million VND per hectare. To support land lease for organizations, households and individuals, with an area of 5 hectares or more, shall be supported with land rental costs not exceeding VND 20 million per ha per year for cultivated land. The support period is not more than 03 years. The total support cost for one project per producer is not more than 200 million per year.

- Policy to support infrastructure and equipment: Invest 100% of the cost to construct shared infrastructure items, including: main road; Main shaft power line; Water supply and drainage system; Project-based wastewater and waste treatment system approved by

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<sup>86</sup> People's Committee of Quang Ninh province (2016), Quang Ninh planning to 2030, vision to 2050 and beyond 2050 and general construction planning for localities in the province”, Issued together with Decision No. 1588 / QD-UBND dated July 28, 2014 of the People's Committee of Quang Ninh Province.



competent authorities. The total cost is not more than 15,000 million VND / project. Support 50% of the cost to build preliminary treatment houses, preserve and process agricultural products; warehouse for preserving agricultural products. The level of support must not exceed VND 2,000 million per producer per project. Support 50% of the cost to build a product display fair under the Program, each commune a product, specifically: For district level product introduction fairs, the support must not exceed VND 1,000 million per project; For provincial product introduction fairs, the support must not exceed VND 2,000 million per project. The program supports 50% of the budget to purchase, build and install cold storage systems, agro-forestry and aquatic product processing lines, production lines, net houses, factories, agricultural machines and agro-forestry seed production establishments Seafood. The level of support must not exceed VND 5,000 million per project.

- Policy of support for buying medicinal plant varieties: The maximum support level of one time for communes, villages extremely difficult, border communes, communes with extreme difficulties in coastal areas and islands up to 70 %; 50% of the remaining communes. Maximum support funding per project: For enterprises and cooperatives is 250 million VND per time; Cooperative group, farm 150 million VND / time; Individuals, households 100 million VND per time.

- Policy to support the purchase of agricultural materials for organic production: Producers are supported with 50% of the cost of buying agricultural materials for production projects, including: organic fertilizers, biological products, plant protection drugs of biological origin. The level of support must not exceed VND 50 million per project.

- Loan interest rate support policy: For projects on the list of products with advantages approved by the province (implemented according to the centralized agricultural production plan), producers are eligible for the interest rate support. Interest rate in Resolution No. 232/2015/NQ-HDND dated 12/12/2015 of the Provincial People's Council on the promulgation of policies to support interest rates for investment in development of production and trading of agricultural products in Quang Ninh province in the period of 2016 - 2020.

- Marketing and sales policy: For current pharmaceutical products, in order to enhance market access, the Provincial People's Committee has adopted a policy to support:

+ The level of support must not exceed 10 million VND / producer / participation in fairs and exhibitions held in the province.

+ The level of support must not exceed 20 million VND / producer / participation in fairs and exhibitions held outside the province.

+ The level of support must not exceed 40 million VND / producer / time to participate in fairs and exhibitions held in foreign countries. Producers are only supported up to 01 time per year when attending overseas fairs and exhibitions and when approved by the Chairman of the Provincial People's Committee.

With the very active incentive policy of the People's Committee of Quang Ninh Province to implement the OCOP program, medicinal herbs are one of many products under the program also supported, every year, the Provincial People's Committee allows opening many fairs in order to promote the sale of goods under the provincial OCOP program, the policy has attracted many participants, which is a good opportunity to promote and consume medicinal products.

In addition, the province commits to implement preferential policies for investors in the field of pharmaceutical development in the province such as supporting ground clearance, leveling, and leasing land; Interest rate support; human resources support, branding and technology transfer, technology innovation.

### **Production capital**

Is the value of assets used as a direct means of production and services, including fixed capital and working capital. The concept of capital is derived from the concept of national wealth. In this study, the author wants to refer to productive capital including fixed capital and working capital. (i) Fixed capital includes factories, machinery, equipment and means of transport; infrastructure, office facilities and office equipment; (ii) Working capital includes inventories of all commodities. Capital production is one of the factors that significantly affects the operation and development of the value chain. In Quang Ninh, capital production in the field of pharmaceuticals is fine The Provincial People's Committee is interested in investing: Supporting the construction of infrastructure, equipment and machines for processing establishments, directly supporting farmers growing medicinal herbs in some stages: seeding, soil preparation ...

#### *3.2.2.2. Micro factors*

### **Production organization capacity of actors participating in the value chain of medicinal plants**

+ Farmers and cooperatives growing medicinal herbs, can imagine the main barriers: product quality, production scale, production techniques, processing and preserving raw products ... are very important factors to their participation in the medicinal value chain. Lack of techniques for planting, tending and processing, small scale of production, it is very difficult for people to join the supply chain. Besides, the positive factors from farmers are: Industriousness, hard work, suffering, along with natural conditions, favorable climate are essential factors for the development of the chain.

+ Collectors: It is one of the most important links in the chain, to connect raw materials created from farmers to processing facilities, as well as being a affiliate partner between the producers. and the end consumer of the value chain. Thus, collectors play a very important role in helping farmers, especially, farmers in isolated areas to consume medicinal products, and at the same time help businesses stabilize production. Without collectors, it is very difficult for businesses to have enough input materials. Enterprises themselves cannot

sign contracts to directly sell products to farmers, farmers just want to sell to collectors and it is easier to buy and sell products with them.

+ Processing facilities: In the value chain of agricultural products in general and the value chain of medicinal herbs in particular, if you want to operate and develop, you cannot underestimate the role of processing establishments. Due to the characteristics of agricultural products as well as medicinal products that are fresh, processing and preservation play a very important role. Harvest medicinal materials must be processed, first of all, the processing of raw materials. From raw materials delivered to the refined processing facilities in the chain or consumed in the market. Therefore, processors are considered to be internal factors that directly affect the operation and development of the medicinal value chain.

Quang Ninh nowadays, because the pharmaceutical processing establishments are small, outdated technology, weak in finance, cannot meet the current pharmaceutical production needs of farmers, specialized production, large-scale are the huge challenge. Limited in capital, unable to compete with large enterprises, in addition, small businesses do not know how to link up to become the competitive large processing establishments in the market. In Quang Ninh, there is a medical equipment and materials company of Quang Ninh province that meets GMP WHO standard, but this company does not use the available pharmaceutical resources in the province but uses raw materials imported from external partners for many different reasons.

+ Consumption factors: Consumption is the last stage in the value chain. Whether or not the chain continues to operate is thanks to the consumer. For fresh medicinal products, consumption takes a very short time to ensure quality, for medicinal materials that are raw materials, as well as refined products from medicinal herbs, have a more flexible time. However, time will affect the medicinal properties in the raw materials. Therefore, consumption is the last but also the first important step. To produce something, we need to find the consumer market for the product. In Quang Ninh, the consumption of medicinal products is also concerned and directed by the Provincial People's Committee, the OCOP program has created favorable conditions for the consumption of products for people, especially agricultural products, that includes medicinal products. In addition, Quang Ninh is a province that has advantages in tourism both marine and spiritual tourism, along with a number of medicinal specialties (Indian Mulberry, Curculigo orchioides, Nervilia fordii Schultze, Golden Camellia) have been well-known, which is also an advantage for better medicinal consumption.

### **Supply chain managing capability**

In-chain producing is a phenomenon which has appeared recently; as a result, both supply chain management capability and pharmacognosy chain are still limited. Almost all administrations and supply chain managers depend on their own experiences; however, they still lack deep knowledge about chain management: the operation, the production, the brand, the store chain, customer service... Therefore, a good supply chain managing capability

would not only help the value chain grow better, but also increase the added value in all sections of the chain.

This notion has newly applied in Vietnam and properly, the chain managers of Vietnam in general and the ones of Quang Ninh in particular have many limitations. According to the surveys and interviews that have been proceeded before, the authority and the management of input material and final product consumption are yet perplexed, especially that making and following the plan to ensure the value chain operated effortlessly.

### **Processing industry**

Pharmaceuticals which are planted and harvested are mostly in-place preprocessed by manual tools and have low added value. Even, the quality standard of the products is vague which might lead to obstacles in consuming. In contrast, few companies which are equipped with machinery in preprocessing and processing have created pharmaceutical products with high added value like Dong Bac Pharmaceutical Plantation, Production and Processing Co Ltd. It has produced some products such as: gynostemma pentaphyllum, jasminum subtriplinerve, Chamberbitter tea... or Golden Camellia products of Dap Thanh Forestry Company: Golden Camellia tea bags, conserved Golden Mamellia... and others: Indian mulberry wine, Indian mulberry glue, moringa tea, Cleistocalyx operculatus tea...

The project “Per local per product” has established and supported many technology -applied commercial organizations create some herbal products and join in the product value chain in every local. Now, in Quang Ninh province, there are 18 pharmaceutical processing corporations, such as: Dong Bac Pharmaceutical Plantation, Production and Processing Co Ltd., Dong Trieu Green Herbal Cooperative, Y Vo Southern Herbal Company, Yen Tu Herbal Cooperative, DTGopro joint stock company, Dap Thanh Forestry joint stock company...

In Quang Ninh, processing technology is quite a big problem (there are few herbal processing companies here) because of the needs of high price technology investment, limited funds of the companies and narrow consumption market. With producers in mass producing areas, if they apply their own new technology and it is successful, they will be funded 100% of expenses of manual documents, sample analysis, technology transfer; 50% of expenses of hiring experts. (The support level will not be surpassed 50% of technology transfer expenses per technic and surpassed 1000 million VND per project.) The organizations which are on the list approved by the Provincial People's Committee are supported completing production process, technical tools, production line of the products which are included in the project “Per local per product” with the support level not surpassing 70% of total expenses per approved project when proceeding in extremely needy communes and villages, border communes, coastal areas and islands according to current regulations, not surpassing 60% of total expenses per approved project with local support

level. Concisely, the total support fund is not over 1000 million VND per project.<sup>87</sup>

### **Enterprises' facilities**

It can be said that to execute the tasks in pharmaceuticals value chain under Quang Ninh province's OCOP program, the enterprises' facilities are somehow restricted.

+ Dong Bac Pharmaceutical Plantation, Production and Processing Ltd. (Cam Pha City) was established in 2010. This is one of the first enterprises to invest in and develop the production of products from medicinal plants in the province. The company invests in a production line of functional food products from medicinal plants. Currently, the company has successfully processed 7 tea bags and 3 herbal capsules with the output of 1.2 million tea bags and 3 million pills per year. The practical survey shows that: Dong Bac Company has made many efforts in production activities, but with the current infrastructure, it does not meet the demand for input materials for farmers. And it limits the operation of the value chain of herbal plants in the province.

+ Yen Tu Herbal Cooperative was established in 2014, with the products under the OCOP program as: betel oil, betel essential oil, reishi mushroom, golden eye-grass wine, and Yen Tu Indian mulberry wine. In 2016, the cooperative provided to the market from 6000 to 7000 bottles of Yen Tu betel oil and 20000 bottles (10ml) of Yen Tu betel essential oil. However, when visiting the cooperative, the infrastructure was nothing but land and plant nursery. Thus, business infrastructure is one of the most important factors of the processing of the herbal plant value chain, to increase the value of products before being released to the market, but this factor is quite insufficient.

+ Dap Thanh Forestry joint stock company is too deep and performs too many functions in the chain (production, collection, processing, and consumption) while the human resource is limited in both quantity and quality. Processing equipment and technology are out-of-date and have not yet produced high-quality products (the shine of camellia, some other products from golden camellia) like Chinese processing technology. Therefore, when upgrading the company, it might be advisable to separate the functions of production and processing as well as consumption to ensure specialization in production and business.

+ Dong Bac Pharmaceutical Plantation, Production and Processing Ltd. has out-of-date processing equipment, has not yet high-quality processed products, difficulty in competing with others in the market (Dong Bac liver detox cannot compete with Tue Linh liver detox ...). Upgrading processing equipment and enhancing marketing and advertising as well as the scientists' influences are essential to maintain and promote processing equipment for the company. At the same time, increasing marketing and advertisements to sell products, enlarging processing scale, and consuming all raw materials for farmers are

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<sup>87</sup> People's Committee of Quang Ninh province (2013), Project "Quang Ninh Province - One commue One product (OCOP) for the period 2013-2016", Issued together with Decision No. 2870 / QD-UBND dated October 22, 2013 of the People's Committee of Quang Ninh province.

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### ***3.3. A general assessment of herbal plant value chain development in Quang Ninh province***

#### *3.3.1. Achievements*

According to practical surveys, combined with computational analysis, the author has found that the results obtained from analyzing the status of the herbal plant value chain:

- In Quang Ninh, there are a lot of natural herbs as well as farming-households and businesses herbs, which shows the huge economic benefits pharmaceuticals production brings to the people, especially individuals, organizations which own products participating in the OCOP program. They focus on investing to expand the area of growing medicinal plants more and want to convert low-economic crops to medicinal plants.

- Another result is that it has formed the production chain link for two key medicinal herbs, namely Indian mulberry, and golden camellia. There are 5 main factors: Producers, Collectors, Processors, Wholesalers and Retailers. Producers include farmers, cooperatives and businesses; Collectors include small-scale collectors and large-scale collectors acquired by in-place collectors; Processors are enterprises, cooperatives or small processing establishments; Wholesalers and Retailers sell both processed and raw products.

- Forming 6 different product consumption channels in the typical medicinal plant value chain, the simplest channel is from producer to consumer directly to consumers of raw and fresh products. The most complete consumption channel is the sequential consumption by aspects participating in the value chain.

- The leaders of Quang Ninh province and the Departments and Agencies specially pay attention to the development of herbal plant production to accomplish the advantages in agricultural production of the province, hoping that pharmaceutical products will become a strong asset, beside the province's strengths in the mineral mining industry and tourism. The policies on land, production premises, science and technology, which are particularly interested in by the Provincial Party Committee and Provincial People's Committee, especially for pharmaceutical production and processing enterprises.

- Initially, businesses and local people have used written contracts to create binding relationships between elements; The link is shown horizontally (between households, cooperative groups, processors and consumers), and vertically (producers, collectors, processors, consumers).

- Farmers are very willing to participate in the value chain of herbal plants. They realize that planting herbs brings much higher economic efficiency than other crops; therefore, they are ready to convert paddy fields and some other crops for medicinal crops, when their products are consumed.

#### *3.3.2. Difficulties*

- Value chain production linkage is limited: There are many medicinal plants, but currently only two herbs have joined in chain production, but the participating components are not very clear. (Buyer - Processor; Processor - Wholesaler; Wholesaler - Retailer). The linkage between the components in the chain is weak, including that the vertical and horizontal links have not been clearly shown.

- Price and market problems: Despite of the proficiency of herbal production, the price of herbal products is yet expensive, because of the influences from other localities, from importing the products with the same use (for example, to treat diabetes but there are too many products, makes it difficult to compete on price, utility, and quality). The farmers' consuming market for raw materials is limited, making it difficult to expand the acreage to grow some non-specific medicinal herbs: gymnema, solanum procumbens, honeysuckle, lemongrass...

The output market of raw medicinal materials has faced many difficulties: households all sell to local traders; there are certainly few units or organizations who are representatives for farmers buying herbal products. Both are very unstable, are often price-squeezed by traders. Not only pharmaceutical products are difficult to consume, but the market is also small and there is no marketing policy to advertise the products to outside markets (like other provinces and international markets). Therefore, mainly products are sold to China by traders: golden camellia (Ba Che), cinnamon (Quang Lam - Dam Ha); sasanqua camellia (Binh Lieu) ... If the Chinese market is blocked, traders will not buy; thus, growers find it difficult to consume their products, thereby, they will limit the maintenance and expansion of production scale.

- Consumer awareness of medicinal herbs is restricted: On the one hand, consumers, especially province-outsiders, do not literally know the true value of herbs and not ready to buy due to high price (golden camellia), along with the harsh competitiveness and undistinguished replicas that are non-branded. On the other hand, the effects of medicinal products are often slower, compared to modern medicines, which are less interested by consumers, especially those who have low incomes, prefer products with quick effects ...

-Restrains of factors when participating in the value chain of medicinal herbs: The number of households that have signed contracts with processing facilities is quite modest, and the scale is small. Enterprises and people themselves have not truly made compromises to build value chains. The minor collaborations are written contracts, in contrast, they only do verbal contracts. Although some have had contractual agreements, the implementation process is not careful and thorough. The processing business depends on the market, while the farmers depend on the enterprises and the weather, there is a surplus of raw materials during the main season or a shortage of raw materials during the off-season, or lack of raw materials for large-scale processing enterprises.

- Laxity in each cooperation: The forms and measures of economic cooperation between processing enterprises and producing/harvesting farmers are still loose, and there is

a lack of effective sanctions to ensure the serious enforcement through the contract. Most of the processing businesses buy through intermediaries (traders, agents), leading to the situation of buying, selling, and price-squeezing on farmers, but not bringing it under control. Also, economic contracts in association relationships are not really guaranteed, and lack of sanctions to strictly enforce the contract. Furthermore, the method of implementing the linkage does not have the equality of interests between the parties. Therefore, the operation of the link model between processing enterprises and pharmaceutical manufacturers is not genuinely stable and effective.

- The role of the four factors in the development of the herbal value chain is misty: Participants in the herbal value chain are not yet clear, especially the roles and the link between boards (including Farmers, Entrepreneur, Scientist and State) are ineffective. They have not determined their role and have not yet promoted their role in the chain yet.

+ The position of pharmaceutical producers is still low in consumption channels and the benefits of the chain mainly belong to the processors and traders. In spite of the effective analyzing, but the ratio of VAT per employee is much lower than that of processors and collectors, since farmers have to spend a lot of efforts to take care of as well as collect medicinal herbs, while agents have to spend a lot of money to invest in input materials (collectors, processors, retailers).

+ Currently, there are several households that have been planting golden camellia and Indian mulberry trees in the locality, due to the effectiveness of the previous planting households. Most of them plant according to the trend, not according to the plans of the locality at the commune or district, lack of basic skills, which most likely will lead to redundancy of raw materials, if there is no link to form a value chain to attach the role of enterprises, especially processing enterprises.

### *3.3.3. The cause of the limitations*

- Producing local medicinal herbs, lacking advertising policy and marketing, searching for big consumption markets (pharmaceutical companies) ... The product is mainly raw and difficult to attract high-income and luxury customers. There are no big companies pioneering in cooperating with farmers to purchase raw materials, ensuring that farmers have a stable consumption market, attaching production, process and consumption to value chains.

- The consumption through products of herbal growing households through traders is easy, but is often price-squeezed, the bumper crops “chorus”, devaluation, no buyers, or the status of the product is not harvested but left in the field. In addition, the production process is not consistent, leading to a heterogeneous quality in the source of input, so it is very difficult in the next stage of consumption of enterprises.

- The poor technical and economic infrastructure in production and process has affected the development of pharmaceutical production in the value chain. Since a



concentrated and large-scale pharmaceutical production area has not been established yet, it is difficult to attract the attention of large processing enterprises. As the small scale of production, simple processing technology, the product is difficult to compete in the market and it is impossible to consume all the medicinal resources provided by farmers. On the other hand, there is no regulations forcing the Company to purchase raw materials in the province for processing, the Company has a right to import input materials in cheap and sufficient places, without infrequently purchasing and preprocessing before putting it into processing (Quang Ninh Pharmaceutical and Medical Equipment Company). In addition, some small businesses with outdated processing technology and small scale cannot process all raw materials although they have signed contracts with farmers (Dong Bac Pharmaceutical Plantation, Production and Processing Ltd). This is a paradox that should be resolved soon by all levels and branches to support both businesses and farmers.

-Some herbal products have not been well-known for their true use; hence, they are mainly sold to Chinese traders. If traders do not buy, people stop producing (golden camellia) or exploiting (cinnamon, star anise, etc.)

- Production capacity of farm households is still limited, mainly following the crowd, and they do not know market analysis and forecast, but only look at positive signs of the market to produce. Farmers are not sure about the benefits of value chain production and totally do not know how to link together to create strength, as well as to link with processing enterprises is the basis for improving production efficiency, turning the production of medicinal herbs into a huge production industry.

- Regulations, policies, especially policies of encouraging the development of contract production are not synchronous and are insufficient to link the interests of producers of raw medicinal herbs to the processing enterprises. The regulations and legal bases are not strong enough to handle contract breaches, and to respect commitments in economic contracts between processors and raw material producers.

*3.3.4. Some problems need to be solved to develop the pharmaceutical value chain in Quang Ninh province:*

**Price and consumption market problems:**

Prices of medicinal products are yet expensive, endured by the competitiveness between other products from other localities, from importing products with the same use (for example, to treat diabetes but there are too many products, makes it difficult to compete on price, utility, and quality). Consumers, especially province-outsiders, do not really know the true value of medicinal products and they are not ready to buy due to the high price, as well as the competitiveness and undistinguished replicas because these products are non-labeled and non-copyrights ... This leads to difficulty of consumption of herbal products, loss of trust and devaluation.

**The problem of vertical, horizontal alignment and multi-board alignment in**

## **production**

Horizontal alignment is the link between farming households to become cooperative groups or cooperatives that need to be implemented to create the movement of growing medicinal plants specialized in large fields, facilitating technology transfer as well as consumption of traders' products. However, in this connection, if medicinal herbs & other fruit trees (sugar-apple, litchi) are competing for land, it is important to clarify the effectiveness of each crop, it is important for farmers to make decision on planting fruit trees or medicinal plants

Vertical alignment is the link between factors in the value chain. Now, in Quang Ninh, the value chain of golden camellia and Indian mulberry is formed, but the link is quite loose. There is no common voice of people in the chain; the contract for product consumption is not protected by law; there is no sharing of market information, and it has not created trust among factors in the chain. In order to promote vertical alignment for sustainable development, Decision 80/2002 / QD-TTg is an important document, facilitating the development of vertical alignment and emphasizing the important role of product sales contracts.

### **The problem affects the small export and import market of herbal products from China**

The problem of producing - processing - trading of medicinal herbs in Quang Ninh in particular and in Vietnam in general has a great influence from China: The purchase price of medicinal herbs; the low price processing technology is mainly imported from China; the medicinal seed varieties; the extraction and refining of herbal products are also from China. Quang Ninh has a border gate with China; therefore, many kinds of medicinal herbs are bought by Chinese traders, then brought back to the country, extracted the essence and brought to the market for sale in Quang Ninh at very low prices, making medicinal herbs in the province are very difficult to compete. For the pharmaceutical industry, the export and import through official channels are regulated, but traders prefer the unofficial route because it is faster and brings to higher profits.

### **Problems of responsibility of factors in the value chain of medicinal plants**

Chain production of medicinal herbs requires very high responsibility for the participating factors, with strong and continuous interaction. In fact, the development of chain production has many limitations, the factors have not actively linked together to produce in chains, limiting the added value of each product. Once the chain has been formed, each element in the chain has not paid attention to the common goal but still does at their own discretion, due to the lack of binding regulations, as well as the limited capacity to operate the chain.

Based on the results of analyzing the current status of the development of the herbal value chain and on the opinions and goals of pharmaceutical development of leaders at all

levels and the views after theoretical research and practical survey on the development of the medicinal value chain in Quang Ninh province, the author proposes solutions on the development of the medicinal plant value chain is based on the principle of ensuring the viewpoints and development goals of the medicinal plant value chain in Quang Ninh province, which are practical, feasible and systematic. In order to effectively implement these solutions, in each solution, the author gives specific activities to organize and to deploy. These solutions are an important basis for state and department management agencies to pay attention to research, direct and apply in practice, so as to build and develop the production of medicinal plants in the value chain in the shortcoming time and to contribute to the successful implementation of the province's socio-economic development goals.

#### **4. Discussion and Conclusion**

Quang Ninh has a lot of advantages in natural conditions for producing medicinal herbs. Beside natural, socio-economic conditions, The government of Quang Ninh province has properly paid attention to the process of medicinal herb production, especially the value chain through OCOP program. Over the past years, many medicinal herbs have been invested and produced by people, as well as by businesses: Ming Arelia, Gac, Five-leaf Ginseng, Oriental Motherwort, Star Anise, .... However, the development of chain medicine production is still very limited, mainly producing according to market signals. Local people and businesses do not know how to link production to create a product value chain.

From a comprehensive analysis of the current status of the medicinal plant value chain development in Quang Ninh province, the author conducts a full analysis of factors affecting production development in the value chain, finding that in addition to subjective factors The other important factors are still the factors that inhibit the development of production of medicinal plants in the value chain: The actors participating in the chain are not fully aware of the benefits of linking production. chain, local authorities are also confused in the organization and management of production in the value chain ... Local authorities at all levels are very interested in developing medicinal plants to exploit potential local strengths, but there are no specific solutions and appropriate policies to promote the production of medicinal plants in the value chain. Although there are specific policies: Supporting seeds, capital, infrastructure for businesses, processing equipment ... but that level of support is not strong enough for the agents to be capable of developing production. value chain.

**The author proposes some recommendations as follows:**

##### **(1) For people directly involved in the production and trading of medicinal herbs**

For growers of medicinal herbs: Medicinal herbs are crops with much higher efficiency than rice and some other crops. However, the consumption market is narrower,

because medicinal herbs are not essential goods, serving daily consumption like rice and some other fruit trees. The consumption of medicinal herbs in Quang Ninh depends a lot on traders, especially traders from China, for some of the most popular herbs today: Cinnamon, Camellia, Wild Indian Mulberry ... so that medicinal plants growers must:

- Absolutely comply with the local production planning, avoid following the movement so as not to fall into the chorus of "good season, falling prices" as in the past time for some agricultural products in the country as well as some pharmaceuticals. whether that happened in Quang Ninh.

- Use medicinal varieties and genetic resources suitable for each soil type under the guidance of scientists or specialized agencies to have the best product quality and increase the value of added value.

- Maintain credibility in the process of buying, selling, transporting goods, interacting with other actors in the chain to reduce costs and increase the value of actors in the medicinal value chain.

- Apply new technologies to production, increase the use of probiotics in pest control, reduce the use of chemical fertilizers and pesticides, ensure the soil, water and health environment for themselves. and community.

**For pharmaceutical processors and traders:** Medicinal materials are fresh, raw products, the processing and preservation are very important, it is necessary to carefully study the processing technology and look for markets to consume the products. Before signing a product sale contract with the producer, especially the farmer, avoid a case where the contract has been signed, but the processing capacity cannot meet the raw material source of the producer, causing loss of trust, especially the confidence of farmers in businesses, is difficult to regain. Processors need to proactively propose and cooperate with scientists, in order to find suitable processing technologies, to create products of higher quality, and at the same time, analyze usage. This is true of medicinal herbs, thus creating the consumer's interest in medicinal products.

## **(2) For state management agencies at district and lower levels**

It is necessary to clearly analyze the effectiveness of medicinal plants and some other local crops so that the people can see the benefits of developing medicinal plants. At the same time, increase propaganda so that people can see the benefits of linking in production, especially horizontal linkage (farming households together to have appropriate production scale, easier to consume products).

Be more proactive in advising Departments, branches as well as the Provincial People's Committee to have a specific and detailed plan for each type of medicinal herbs with strengths of the locality, creating favorable conditions for production enterprises. and processing medicinal herbs in the area so that they together with medicinal plant growers can perform the role of production and processing, while maintaining the development of

the business, contributing to improving income for local people.

### **(3) For departments, branches of the province**

In order for the pharmaceutical industry to develop properly with the current potential and strengths of the province, the role of relevant departments and agencies to advise the Provincial People's Committee is very important, namely:

- The Department of Planning and Investment is in charge of coordinating with the Department of Agriculture and Rural Development, the New Rural Construction Board to advise the Provincial People's Committee: Develop long-term plans and make plans for each specific period to continue to improve. and develop the Ba Gio and Tra Hoa Vang medicinal value chain, form medicinal value chains by region as proposed in the solution, and at the same time build a binding mechanism for actors in the value chain, PPC signed the issuance to attach their legal responsibilities in the value chain operation.

- The Department of Agriculture and Rural Development, the New Rural Construction Board coordinates with the Agricultural Extension Center to organize training, training, and guidance on the production method according to the value chain for each individual medicinal ingredient; Actively build a coordination mechanism between actors participating in the value chain, submit to the Provincial People's Committee for signature and issue as a basis for value development of new medicinal plants.

- The Department of Industry and Trade presides over and coordinates with the Steering Committee of the OCOP program to advertise and market pharmaceutical products widely to the market outside the province, in order to seek output for the product. Without an output market, production cannot be expanded, and the links in the chain cannot function.

### **(4) For Provincial People's Committee**

- It is necessary to have policies to invest and upgrade equipment for a number of pharmaceutical processing establishments to ensure the processing of all raw materials produced by farmers, and to process high quality products. , diversifying products, towards convenient products.

- Continue to research to have strong enough land policy, planning, compensation for site clearance, in order to upgrade the scale of factory construction, waste treatment to the environment for pharmaceutical processing establishments. materials in the early stage of establishment and operation.

- Strengthen advertising and marketing products outside the province and internationally so that consumers know more about medicinal products. At the same time, together with businesses, investors actively seek output markets for both raw materials and products processed from medicinal herbs.

- Issue a coordination mechanism between actors in the chain, in order to attach responsibilities and benefits of actors in the chain. Each actor participating in the chain, when

violating the regulations, it is necessary to have an appropriate handling mechanism to maintain the sustainability and cohesion of the actors in the chain.

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