

An Investigation and Analysis of Features of (*Codonopsis javanica* (Blume) Hook.F & Thoms) in SON LA

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Abstract— *Codonopsis Javanica* (Blume) Hook.F & Thoms is called with Scientific name: *Codonopsis javanica* (Blume) Hook.f. & Thomson, Campanulaceae (the bellflower family). Plant description: Herbaceous, perennial, creeping by winding stems. Body pale green or purple. Leaves opposite, rarely staggered, heart-shaped at base, pointed at tip; edges are wavy or slightly notched. Roots cylindrical long, diameter can reach 1.5-2 cm, branched, root tips enlarged, with many keloid scars. Flowers grow individually in the interstitium, bell-shaped, white or yellowish, with purple veins in the throat. Fruit capsule, globose with 5 translucent edges, purple or red-purple when ripe, many seeds. The whole plant has white latex. Harvest in winter, wash the soil, cut off the roots and rootlets, dry in the sun or dry at low temperature to slightly dry, roll until soft, then gently dry again.

In the paper authors also mentioned its uses and usage: Ginseng is used to treat depression, anorexia, fatigue, anemia; also used in uterine prolapse, haemorrhage, jaundice, leukocytosis, nephritis, albumin urine... Used alone or in combination with other drugs.. *Codonopsis Javanica* (Blume) Hook.F & Thoms root is a product in Son La (mainly the Thai community, the H'Mong people). On the other hand, *Codonopsis Javanica* (Blume) Hook.F & Thoms also are discovered at many other areas of Vietnam such as Lao cai, Lam Dong, etc.

Keywords— *Codonopsis Javanica* (Blume) Hook.F & Thoms, investigation, distribution, indigenous knowledge, Son La province.

I. INTRODUCTION

Codonopsis Javanica is called Dang sam (Vietnamese), kind of ginseng is the dried or dried root of the ginseng plant (*Codonopsis* sp), the bell flower family (Campanulaceae). It is ginseng in Vietnam [*Codonopsis javanica* (Blume) Hook f.] has the same chemical composition and uses as other ginsengs. The tree grows wild and is grown in some highlands. Pharmaceutical materials must be partly imported from China.



Fig 1 – *Codonopsis*
(source: internet)

II. PREVIOUS STUDIES

We analyze in below table:

Table 1 – Summary of related studies

Authors	Year	Content, results
Pham Thanh Huyen et al	2014	<i>Codonopsis javanica</i> (Blume) Hook. f. & Thoms. is a medicinal plant widely used in traditional medicine in some Asian countries. In Vietnam, morphological descriptions of this species weren't existed among published works, especially its anatomical structure has not been described in comprehensive way. Thus, study on morphological and microscopic characteristics of 28 Dang sam samples collected in 9 locations of 7 provinces in Vietnam has been conducted. Study results showed that among collected samples there are variations in leave, fruit and flower morphology, especially in the number of petals, stigma lobes and stamens, position of the sepals on ovary. Complete description on morphological and microscopic characteristics reported in this study will be helpful for conservation and development of Dang sam in Vietnam.
Tran Cong Dinh	2017	Research results show that Party ginseng is a herbaceous plant, creeping on its trunk, likes moisture, likes light, thrives on feralit of high mountain red and yellow soil, is loose and rich in humus. Ginseng Party species grows on all different types of habitats, closely related to vegetation cover, topography and climate. In the wild, ginseng species is often distributed in secondary forests, forest edges, stream banks, fallow fields, places with canopy cover < 0.3, altitude from 800 to 1,400 m, slope over 20 degrees, rainfall from 2,000 to 2,500 mm/year. The frequency of occurrence is 11.33 trees/km, the natural distribution density is quite high (2,307 trees/ha), the rate of good quality trees (trees meeting grade A standards) is very high (88.89. %), on average, each tree has 3.46 branches/plant, with 48.61% of mature plants flowering and fruiting.
Wu et al	2020	the crude polysaccharides of <i>C. javanica</i> (CJP) was obtained from <i>Codonopsis javanica</i> (Blume) Hook. f. et Thomson using hot water extraction method, which was separated and purified by DEAE-cellulose column and Sepharose CL-6B column. The structure of the purified component was preliminary characterized by gas chromatography-mass spectrometer (GC-MS), high performance gel permeation chromatography (HPGPC) and infrared spectroscopy (IR). By examining the degree of delayed-type hypersensitivity (DTH) in mice and carbon particle clearance index, the immunomodulatory activity was clarified. The results showed that the extraction rate of CJP was $24.9 \pm 0.5\%$. After purification, the refined polysaccharides component (CJP-2) was obtained. The structural characterization results indicated that CJP-2 was mainly composed of mannose, glucose, and galactose, and its molecular weight was 790 Da. Immunomodulation results showed that the low and medium levels of CJP significantly enhanced the degree of DTH in mice ($P < 0.05$). CJP can improve the clearance index of mice and enhance their charcoal removal function. The study indicates that <i>C. javanica</i> is a good source of polysaccharides, and CJP may be a new type of immunomodulator.
Ngoc, N.T.B, Nuong, L.N	2022	<i>Codonopsis Javanica</i> is used as a tonic to treat diseases related to raw, loose or broken stools, indigestion, pale face, low voice, weak limbs, shortness of breath, fatigue, and waste. In addition, iso ginseng is also used instead of ginseng in remedies that can treat diseases such as weak digestion, poor digestion, along with other medicines such as Bach Truc, Bach Linh, Hoai Son, Lien humiliation

(source: author synthesis)

III. METHODOLOGY

Authors collect A wide range of data for analyses and propose solutions. Observations in Vietnam planting were also mentioned. Then, Interviews were conducted on the basis of simple questionnaires stating a number of key

questions to meet the content objectives of the research. The interview process was conducted flexibly, and local languages were used to facilitate collection information.

IV. MAIN FINDINGS

4.1 Overview

Dinh Thi Hoa, Doan Thi Thuy Linh (2013) mentioned that conducted in the Copia Nature Reserve, Thuan Chau district, Son La province to detennine the distribution characteristics of Dang sam (*Codonopsis javanica* (Blume) HookJ. et Thoms, 1855). The survey results showed that Dang sam distributes at an average frequency of 2.75 Individualslkm, main distribution is at an altitude of less than 1,000m (67.61 percent). The most suitable habitat is around the rice fields (23.94 percent). The rate of mature individuals of Dang sam is 55 percent with the corresponding density of 0.08 individuals/m2 (800 individuals/ha). The number of branches is 2.5 brancheslindividual. The rate of individuals of good quality (Class A) is high (62.50 percent). Dang sam can climb on a lot kind of support such as wood, bamboo, shrub, grass, or on the ground. The rate of young regenerated individuals is 45 percent with a density of 0.065 individuals/m2 (650 individualslha), and an average of 1.69 brancheslindividual. About 61.54 percent young regenerated individuals have a height of less than 0.5m. The rate of regeneration tom seed is high, about 53.85 percent.

Then, Vo Van Chi, Tran Hop (2002) specified that *Codonopsis Javanica* has the names Sam leo, Ginseng, Chicken thighs, Man Ray Cay (Tay), Cang Ho (H'Mong) are widely distributed in Lai Chau and Lao Cai provinces,

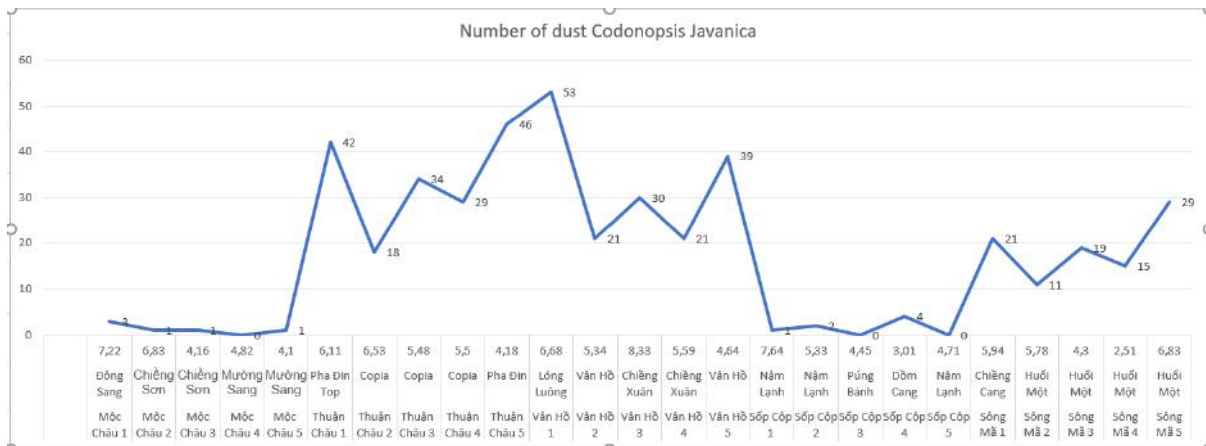
Ha Giang, Son La, Yen Bai, Tuyen Quang, Cao Bang, Lang Son to Kon Tum, Lam Dong, Quang Nam provinces.

Next, Nguyen Thi Bich Ngoc, Le Ngoc Nuong (2022) stated that *Codonopsis Javanica* (Blume) Hook.F & Thoms is a vine. *Codonopsis Javanica* (Blume) Hook.F & Thoms has medicinal value, high economic value and conservation significance. *Codonopsis Javanica* (Blume) Hook.F & Thoms is recorded in the Vietnam Red Book (2007) under the VU level (will be endangered), group 2 in the List of endangered and rare forest plants and animals in the Decree 06/2019 of the Government of Vietnam. Research results have clarified the characteristics of natural forests where species are distributed in terms of forest nests, mother trees, regenerated trees, demand for use, market for consumption, and methods of collection by local people. *Codonopsis Javanica* (Blume) Hook.F & Thoms root is a product very familiar to the local community in Son La from generations to now. In the community of people living near the forest (mainly the Thai community, the H'Mong people) have passed on the experience of species identification, how to exploit, use, and begin to pay attention to planting in the garden. households and commercialization of products. These are important bases for breeding and afforestation to develop this species locally.

4.2 Planting

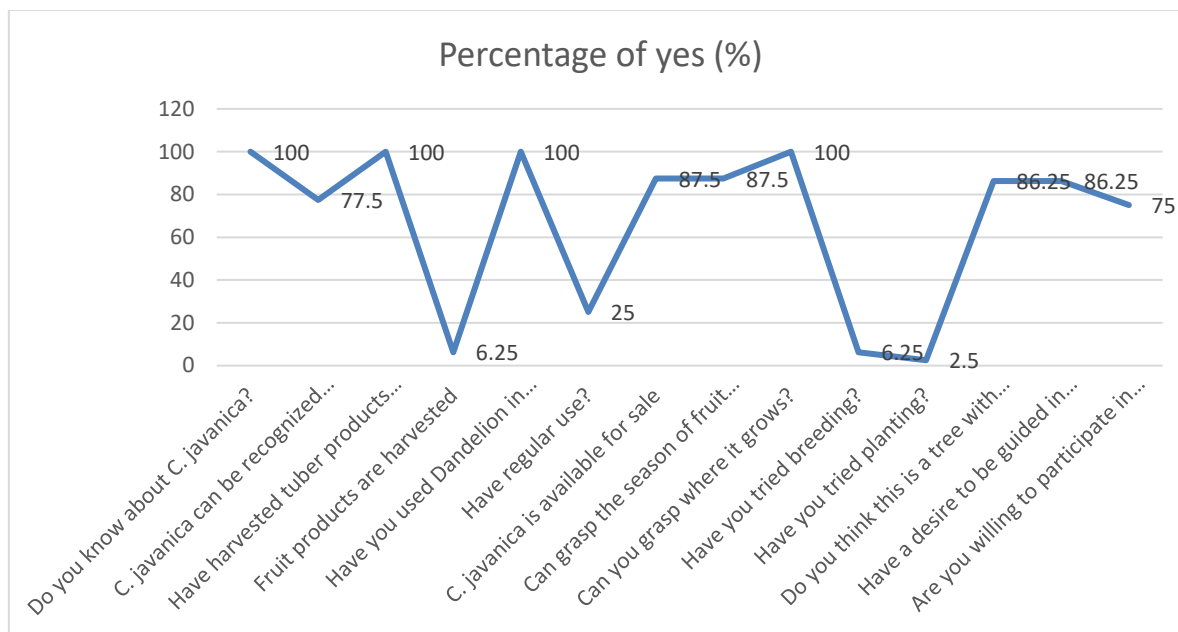
We look at below chart:

Chart 1 – *Codonopsis Javanica* species in Son La



(source: author synthesis)

Chart 2 – Results of Yes votes for questionnaires



(source; author analysis)

We see that:

100% maximum yes votes when asked about knowing javanica, products, where it grows, etc.

Minimum 6.25% when asked about harvested, breeding, etc.

Crop and growing:

For javanica, the regeneration from seeds is quite good and the propagation coefficient is large because of Party seeds

Ginseng is very small, one fruit bears many seeds. However, for breeding work, attention should be paid to

Harvest and sow immediately after the fruit is ripe because Party ginseng seeds quickly lose their germinating power.

** Indications: The results of the quality hierarchy are shown in Table 6 for*

It was found that the quality of regenerated trees was generally good with nearly 70% of the regenerated trees achieving good grade (grade A), followed by the average type, accounting for 28.08% and the lowest, the bad type, accounting for only 7.69%.

(Hoa, D.T., Linh, D.T.T., 2013)



Fig 2 – Javanica

(source: internet)

V. DISCUSSION AND CONCLUSION

Codonopsis javanica (Blume) Hook.f. & Thomson is an **accepted** name

This name is the **accepted** name of a species in the genus *Codonopsis* (family *Campanulaceae*).

Nguyen Thi Bich Ngoc (2022) mentioned Van Ho district, Son La province has long recorded the natural distribution and is the place to exchange and trade many medicinal species, including *C. javanica*. The roots of *C. javanica*, which are collected in the wild, especially under the forest canopy, are very clean and healthy organic products that are popular with consumers. Together with the sharing from the community about the experience in using *C. javanica* products for health care, this product has become even more attractive. Population with a specificity, up to 85% are

ethnic minorities, mainly H'Mong, Thai, Dao, Muong, Tay, this is a treasure containing a rich source of indigenous knowledge in the use of medicinal plants for daily life, including *C. javanica*. However, not all indigenous knowledge of the community is relevant to the promotion and sustainable development of *C. javanica*.

Codonopsis Javanica has uses:

Uses: Tonic. Cure anemia, jaundice, lymphatic disease, adrenal inflammation; fatigue, poor appetite, cough, stomach pain, lack of milk, loose stools, painful swollen feet (Roots).

Distribution: The tree grows naturally and is also grown in some high mountainous areas.



Fig 3 – *Codonopsis j* growing
(source: dongyhentritruc.vn)

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