Access to Medicinal Plant Resources in Vietnam - A Fair and Equitable Sharing of Benefits

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การเข้าถึงทรัพยากรพืชสมุนไพรในเวียดนาม - การนำไปใช้ประโยชน์ร่วมกันอย่างเป็นธรรมและเท่าเทียม

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บทคัดย่อ

ในประเทศไทยและเวียดนาม มีพืชสมุนไพรที่ได้รับทะเบียนไว้เป็นจำนวนถึง 3,830 ชนิด แต่บางชนิดจากสมุนไพรพื้นบ้านจำนวนมากมายที่ไม่ได้นำมาวิจัยและตีพิมพ์เผยแพร่ องค์ความรู้ที่มีอยู่ในการใช้พืชและพืชในบริบททางยาและสุขภาพในเวียดนามมีมากมายและมีค่า แต่สิ่งที่รักษาความที่ทรงคุณค่าเหล่านี้กำลังลดลงอย่างรุนแรง โดยเฉพาะพืชที่มีค่าขายสูง ต้องได้รับการคุ้มครอง เช่น Cordyceps sinensis, Ginseng, Aquilaria crassna และอื่นๆ ที่มีค่าชนิด องค์ความรู้พืชสมุนไพรพื้นบ้านกำลังสูญหาย สาเหตุหนึ่งเนื่องจากการใช้ประโยชน์จากสมุนไพรมากเกินไป นำไปสู่ความไม่คุ้มค่าของการใช้และผลิตพืชสมุนไพรเท่ากับสิ่งของคนมากมาย แต่ไม่ได้ถูกนำไปแปรรูปอย่างเป็นธรรมและไม่เป็นหลักแหล่งคุณภาพ เนื่องจากไม่ได้ออกมายังใจให้รู้จักและพัฒนา เพื่อให้เป็นการจัดให้มีสิทธิ์ที่เท่าเทียมกันและยังมีระบบการจดทะเบียนถูกต้อง หน่วยงานที่เกี่ยวข้องได้รับการสิทธิ์อย่างยิ่ง

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Scientific Commentary

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Abstract

There are in Vietnam 3,830 registered medicinal plant species, apart from numerous ethno-medicinal plants which have not been sufficiently inventoried and documented. Traditional knowledge in using animals and plants for treatment and health care in Vietnam is very rich and valuable. But these precious natural resources are becoming depleted. Many precious plant species are critically endangered such as Coscinium fenestratum, Coptis chinensis, Aquilaria crassna etc.; indigenous knowledge is being lost. One of the causes is the over-exploitation of materia medica, which is leading to imbalance between supply and demand. These plant materials have created many benefits, but these are not being shared in a fair and equitable manner. The paper deals also with the problem of how to create a system of indigenous knowledge registration for the ethnic minority people living in the mountainous areas.

Key words

Ethno-medicinal plants, Indigenous knowledge, Sharing of benefit, Intellectual property registration

Introduction

The term "Medicinal Plant Resources" is usually understood as genetic medicinal plant resources. This understanding is correct but not comprehensive. In fact, this term should include two parts, namely (i) genetic resources (genes of medicinal plant or a material part), and (ii) resources of knowledge on medicinal use (an immaterial part). In Vietnam, these two parts of Medicinal Plant Resources are both rich and diverse (1, 2).

Genetic resources

According to information of Institute of Materia medica (2003), in Vietnam there are 3,830 recorded medicinal plant species (3), representing approximately 11% of medicinal plants in the world (approximately 35,000 species). In comparison with land surface area, the percentage of medicinal plants in Vietnam is rather high. However, there are still a great number of medicinal plants that were discovered and used only by ethnic minority groups or communities, and these have not been recorded in any medicinal plant books. These are known as Ethno-medicinal Plants, and no one knows the true number of such plant species.

Beside cultivated medicinal plants, almost all wild medicinal plants have scattered distribution and occur in low harvestable quantities. Due to high demand for such plants for medicine produc-
tion or for extraction, hundreds of thousand of tons of raw medicinal materials are exploited from wild plants. With the thought that medicinal plants are common resources belonging to everybody, or a "gift from God", human beings fight each other in order to collect wastefully such resources, indiscriminately collecting both young and old plants. This leads to a rapid exhaustion of medicinal plant resources and many species face the risk of becoming extinct. For example, in order to collect *Dendrobium nobile*, an orchid epiphyte on big trees in the forest, a number of branches or a whole tree is cut down. Or, to collect seeds of *Scaphium lycnophorum*, a woody tree of 15 to 20 meter height, some people are ready to cut a whole tree down only because the tree is too high and difficult to climb. *Coscinium fenestratum*, a big woody liana with stem diameter as large as human biceps, typically climbs up on big trees. Since such liana climbs very high, the collectors cannot take it all, so they cut off the lower parts and leave all the remaining higher parts and branches in the forest to rot. Many other plants used to be very common but are currently becoming rare, such as *Coscinium*, *Coptis chinensis*, *Caesalpinia sappan*, *Stephania* sp., *Fallopia multiflora*, *Ardisia sylvestris* and so on. Especially, *Aquilaria crassna*, which has been rashly exploited and cut down in order to collect aloe wood. People wrongly fell many trees without aloe wood or trees with no valuable aloe wood so much so that *Aquilaria crassna* has been recorded in the Red Data Book of Vietnam (4), which listed all plant and animal species under higher extinction risk, so as to focus the attention on conservation measures designed to protect them, and also in the list of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

All exploiters of such medicinal plants have the same purpose, which is to seek profits for themselves. Since they do not understand environmental protection laws and regulations nor the reproductive cycle of the living being, these people exploit rashly and illegally. With the only aim being to take as much profits as possible, the medicinal plant exploiters have intentionally or unintentionally taken away the regenerative capacity of the plants. Their profits are significant, but they do not pay the tax of exploitation, nor share the benefits in order to regenerate lost or damaged genetic resources.

In Vietnam, there is a saying "Forest is gold". It is true, but this treasure is being illegally looted.

**Ethno-medicinal plants and resources of traditional medical knowledge**

It would be shortcoming to talk about medicinal plant resources without mentioning ethno-medicinal plants. In Vietnam, apart from the Kinh who represents about 86% of the population, there are 53 ethnic minority groups who are living and surviving mainly in mountainous areas from the North to the South of the country. Many ethnic minority communities are living in very far and remote areas, isolated from other groups of people. For thousands of years, during the long period of struggling for survival, every group of people (including the old Viet group) has been known to accumulate knowledge of using plants as medicines for disease treatment and health care. These plants are *ethno-medicinal plants* and the experiences in curing the diseases are *hereditary medical knowledge* that is handed down from generation to generation. This heirloom knowledge belongs to, and is owned by, a family, handed down orally and kept in secret. Furthermore, there are only one or very few people in a family who can identify the medicinal plants and know their correct use for family members and community. These people are normally women. The resources of local ethno-medicinal plants and traditional medical knowledge have very highly significant practical and scientific values. They are really precious property in the folk medicine treasury of Vietnam. Thank to this treasure, scientists will be able to find new medicines.

To date, we have not had a comprehensive understanding of these natural resources. We do not know how many species of ethno-medicinal plants occur in Vietnam (apart from 3,830 recorded species), their distribution and valuable potential, as well as how to use them. We also do not know how many plant species have been endangered or are at risk of being extinct. The above stated issues
should be clearly identified in order to arrive at the solutions to provide for sustainable management, research, inheritance, conservation, use and development of such precious resources with the aim to serve people’s health care, as well as to contribute to the economic development of the country.

In the last several decades, modern science and technology have rapidly developed and promoted the progress of various scientific areas. Therefore, modern occidental medicine has developed enormously and dominated most of the medical world. In many countries, especially in developed countries, modern occidental medicine prevails against, and seems to replace, traditional medicine. Furthermore, hereditary medicine of ethnic minority groups faces risk of loss. The knowledge of hereditary medicine, which is not yet recorded in any books, is at the most serious risk of loss. It means that ethno-medicinal plant resources exist only when there still are people who know how to use these resources. Once these people (who are for the most part local healers) are deceased and their knowledge has not been transferred to new generations, or has not been recorded and documented, the existing medicinal plants simply become wild species, because nobody knows their use.

In addition, there are some plants that one group of people considers precious but others consider as wild and worthless, because they do not have any knowledge about the plant. Or the same plant is used differently by different groups of people although they live near each other, even in the same village. That is characteristic of ethno-medicinal plants.

**Intellectual property (IP) and sharing of benefits**

Intellectual Property Rights (IPRs) in general, and knowledge of medicinal plant use in particular, are issues worth discussing in not only regional but also international areas, between industrial developed countries and developing countries. Does the IP belong to individual, family, familial lines, community, and nation or does it belong to the whole world? If this issue of ownership is not clearly determined, it will be certainly difficult to identify with whom and how the benefits gathered from specific product of traditional indigenous knowledge are to be shared. This problem is usually ignored intentionally or unintentionally by some people, leading to a more advantaged situation for specific individuals, companies or enterprises.

In accordance with WTO, biological resources, including medicinal plants, are a common heritage of human beings. However, this definition excludes indigenous knowledge as well as the rights of the community who owns the mentioned indigenous knowledge. Article 15 of the Convention on Biodiversity (CBD) (5) recognizes that “the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subjected to national legislation”, and “Each contracting party shall take legislative, administrative or policy measures... with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the contracting party providing such resources. Such sharing shall be upon mutually agreed terms”.

However, the understanding and application of CBD into practice varies from one country to another. Many countries automatically consider biological resources as national property. The current discussion indicates that biological resources and their knowledge of uses should be understood as “owned properties”, and should not be considered as “license” for “nationalization”. Currently, there is a risk that these resources can be stolen at the international level as well as at the national level. The rich and developed countries are stealing natural resources from poor and developing countries, which although poor in economy, are abundant in such resources. Local pharmaceutical companies and scientists are even stealing resources from their local communities of people.

Although debates continue and have yet to be concluded, in practice, the people who hold the knowledge on use of medicinal plants in the
community earn their livelihood based mainly on their knowledge and experience of medicinal plant use. Accordingly, the setting up of a detailed document of all indigenous knowledge and experiences should be carefully carried out, especially, the documents of investigation in inheritance and development of new medicine. It should be kept as confidential knowledge and the experience of individual and community. The levels of confidence may be classified as follows: (i) Do not ask the people for their method of combination of medicinal components on a very detailed basis (normally, this combination is a secret of an individual or family), and (ii) To ensure such information is not exploited by the third parties for commercial purpose without consent of the original owner of information.

Sharing of benefit arising from biodiversity in order to conserve biodiversity

From November 21-23, 1996 in Hanoi a workshop on “Creating revenues from biodiversity in order to conserve it” was co-chaired by Ministry of Natural Resources and Environment (MNRE) [formerly, Ministry of Science, Technology and Environment (MOSTE)] and DANIDA (Danish International Development Agency) project, funded by a local grant from the Royal Danish Embassy in Hanoi. Various managers, scientists, representatives of NGOs, countries, international organizations and interested people discussed solutions to the challenges of biodiversity preservation through sustainable use and equitable sharing of benefits from biodiversity, including the benefits obtained from knowledge of management and the use of natural resources by the local communities.

This issue is really necessary and important to developing countries where various and rich natural genetic resources and indigenous knowledge exist. Such resources have been over-exploited but the people and community where the resources exist do not receive benefits from their resources.

In the last century, many precious chemical components of plants were discovered, for example, reserpine was extracted for the first time in *Rauvolfia serpentina* of India, quinine in *Cinchona* (*Cinchona ledgeriana*) and so on. Every year, pharmaceutical industry in developed countries earn hundreds of millions of US dollars from such plants, but how much money do the developed countries share with the countries who first discovered such components? The *R. serpentina* plant brought to USA about 260 million dollars of benefits every year, while India received nothing. In principle, benefits should be shared based on agreement between the country providing the resources and the country or organization exploiting such resources. A part of such benefits should be reinvested in order to conserve and develop genetic resources of the indigenous medicinal plants and knowledge.

What is the situation in Vietnam?

There are many similar cases in Vietnam; for example, a mountain health care unit acquires ethno-medicinal plants from local people. After being used locally for treatment of disease, these medicinal plants are transferred to a scientist for further research, because this local unit lacks sufficient facilities for research, formulation, and scientific documentation. Using the state budget, the scientist and his/her team identify chemical components, test all necessary biological activities, search for an appropriate form of pharmaceutical product, appraise and approve the product. Then, the research results are transferred to the pharmaceutical producer.

After selling the products in the market, the producer gains benefits (big M = money), while the scientist and his/her team receive only a small benefit (small m). Normally, this is a very limited benefit in comparison to the turnover of the producer. This “small m” benefit is called fees for transfer of research result. The pharmaceutical products are produced in a continuous cycle and “big and bigger M” benefits will then be poured into the pocket of the producer. While the producer receives such benefit, the scientist receives “small m” benefit, and the individuals and/or community who originally owned the natural resources and knowledge of using medicinal plants are pushed to the outside. Accordingly, they lose their legitimate right that they did not realize was theirs. The
situation is similar to the health care unit that first inherited the heirloom; it means that their legitimate right was also ignored. In this specific case, the interest of scientist, to some extent, was already repaid but he does not seem to remember from where he received the information. Furthermore, the producer does not take any responsibility to share benefits with the people or the community who are owners of the knowledge of medicinal plant use. It may be a lack of awareness or there may be a certain reason, but it is clearly a phenomenon of arrogation of indigenous knowledge within a nation.

In order to generalize this issue, we have two charts to show the circulation of biological resources and the sharing of benefit before and after intervention of scientist and producer.

❖ The first stage (Chart 1): There is only an intervention of the people to natural resources.

As mentioned, medicinal plants and animals are known based on experiences using biological resources (indigenous knowledge) in relation to health care. Initially, there is not any conflict between people and plants. The people in the community collect plants for their health care and for selling in the market. The people have benefits from selling medicinal plants. The existing point of view on conservation provides that whoever uses forest products should spend a part of the resulting benefit to "feed" the forest. In this case, the people do not pay by money but by their effort to protect the forest. They know the method to use and protect natural resources in a sustainable manner with the aim to be able to exploit the forest in a continuous and long-term basis. This sustainable use of natural resources and conservation with people's participation is the most effective solution.

❖ The second, third stage and so on...

(Chart 2): With the intervention of scientist and pharmaceutical manufacturer.

- The second stage: With the involvement of scientist, two cases exist:

(i) After first knowing that a plant is used as medicine based on the knowledge and experience of the local people or community, the scientist starts to conduct research, identification of chemical compounds, etc. in accordance with

![Chart 1. Intervention by the people to natural resources](chart.png)
Scientific process. The scientist hopes to compile comprehensive records of the new medicinal plant and gradually looks for a new medicine (this is the shortest way that avoids expensive initial screening). Then, the research work will be transferred to a pharmaceutical manufacturer, the medicine is produced and sold to the market, and the manufacturer gains benefits (6).

(ii) Without inheritance of people's knowledge on the use of plants, the research process begins with screening and survey in nature. This process of botanical, chemical and biological research etc. takes a long time and the scientist has to spend a lot of effort and finance in order to discover medicinal components, and then step by step to develop new medicines.

Since the role of scientist cannot be ignored in this stage, he is paid a remuneration to compensate for his research. Compared to the big profits obtained by the manufacturer, this remuneration is only a very small amount of the profit. Once the medicines are produced, the circulation of this stage is unlimited if the medicines are still required by the market.

- The third stage and so on...: Represents active exploitation of natural resources by the manufacturer.
Once the medicine has been produced stably, or, in other words, there is a large demand in the market, the manufacturer has then mastered the production process, and will actively exploit medicinal materials in various other places and he will enlarge the production scale in order to obtain greater profits. However, he does not acknowledge his duty to share the profits gained for conservation of such natural resources. This is a problem of moral conduct in production and business in not only our country but also in many other countries all over the world.

During the last few years, many national workshops on the issue have been organized in Vietnam, such as the workshops on “Laws on approach and sharing of benefits from use of botanical genetic resources” (August 17-18, 2000) and “Laws on approaching botanical genetic resources in Vietnam” (third time, August 28, 2001). A project on “Drafting legal normative documents on approaching botanical genetic resources in Vietnam” has been deployed. These activities are extremely necessary. Discussions have been plentiful, but more important is that a specific action plan should be formulated.

Indigenous knowledge registration

The mentioned cases show that medicinal plants have been used to generate profit for a few people or companies, but that benefit sharing has not been fair and equitable.

Sharing of benefits needs a specific address. In this circumstance, the specific address is the owner of knowledge (or natural resources), because benefits are produced from these knowledge and resources. Normally, the people who have inventions or creations and improvement, will go to the state authority to register and fulfill all necessary procedures to protect his/her ownership of intellectual property (IP). Without IP registration, the State has no legal basis to protect the right of the individual or community. Previously, some literature works have been copied, some trademarks have been faked or appropriated by foreigners, because they had not been registered. The importance of IP registration has not been well appreciated by the people, even by people living in urban areas. In other cases, people hesitate to register IP because the procedures are quite complicated, though they know the importance of IP registration.

This problem also occurs with ethnic healers who live in very far and remote mountainous areas. From their village to market or to the nearest town, they must walk for a half-day or more. They do not understand or speak Vietnamese well, their knowledge of IP registration is very limited, their earnings are mainly based on small amounts of agricultural or forest products. All these reasons hinder them to register their IP, even if they have very good ethno-medicinal knowledge or they are aware of the value of indigenous knowledge inherited from their ancestors.

To date, it seems that no one in ethnic minority groups of people in mountainous areas in Vietnam goes to the national organization for IP in Hanoi to register his/her family’s or community’s indigenous knowledge property. If they learn to protect and exploit their precious indigenous knowledge (IK) correctly, it will bring a happy and prosperous life for themselves.

How do we develop a system for indigenous knowledge registration?

Based on the mentioned situation, the process of registration of IK should be community-based. This means that we must create a coordination between local people (individual or community) and the State. The State should conduct education programs for the people in order to help them understand and know their legitimate rights that are protected by the State. The State should also provide adequate budget for the registration of traditional knowledge in the local area. Then, the State can review, select, record, document and certify IP rights for the people who own such knowledge (7, 8).

Conclusion

The issue of benefit sharing from medicinal plant resources and indigenous knowledge registration is new, difficult and complicated in Vietnam, because there is no precedent to resolve
the problem. We have a saying "the first steps are the hardest", however we also have another saying "well begun is half done". In order to protect legitimate rights and interest of the community and the country, and to conserve precious medicinal plants and indigenous medical knowledge that is unique to our nation, we should carry out as soon as possible the registration of such knowledge, so that by selecting the most beneficial local knowledge, we can gradually apply it on a national scale.

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References