

Translating Tribal Plants: Issues of Sustainability

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Keywords: Ethnobotany, medicinal plants, traditional medicines

Abstract

The globalization of information and increased awareness of plant resources of all kinds has spurred tremendous demand for a wide variety of plant materials. From specialty coffees to aromatherapy oils to medicinal plant remedies from faraway places, the world market shows a voracious appetite for plants. Indeed, the medicinal plant market is one of the most dynamic and rapidly growing sectors in the field of botanical resources. As people re-connect with natural health-based principles and shy away from expensive and potentially hazardous synthetic drugs, natural medicinal plants offer relief for a wide range of health needs. Today, 85 percent of the world's population, approximately 5.1 billion people, turn to plants as primary medicines. This tremendous demand for medicinal plants and their preparations opens rich opportunities for individuals, communities, and commercial entities along the chain of medicinal plant trade. Ironically, the economic demand for medicinal and aromatic plants may help preserve natural environments and indigenous cultures in situations in which value-based education efforts have failed. In a world that places more value on an individual's economic worth instead of intrinsic natural or humane merit, a scenario develops in which a hectare of aromatic or medicinal plants may yield more profit than can be derived from timber production, cattle grazing or mining. Equally, in this scenario, indigenous native people can participate and benefit from the cultivation, harvesting, and processing of botanical resources. From cultivation to harvesting, processing, and marketing, we have the chance to simultaneously provide safe, beneficial remedies for human needs and to preserve and promote environmental sustainability and indigenous native cultures. From shamans to store shelves, an examination of natural, plant-based medicines transition from the natural environment to the consumer marketplace, and how in the process can promote values and ideals which remain unfulfilled by other means.

INTRODUCTION

Ironically, economic demand for medicinal plants may help to preserve some natural environments and indigenous cultures, where value-based information efforts have failed. Today, every hectare of land and every individual is increasingly evaluated on the basis of economic worth instead of intrinsic natural or humane merit. In this scenario, a hectare of aromatic or medicinal plants may yield more profit than what can be derived from timber production, cattle grazing or mining. Indigenous native people can participate in, and benefit from, the cultivation, harvesting and processing of botanical resources.

The medicinal plant market is one of the most dynamic and rapidly growing sectors in the field of botanical resources. As people re-connect with natural health-based principles, and as they shy away from expensive and potentially hazardous synthetic drugs, natural medicinal plants offer relief for a wide range of health needs. Today 85 % of the world's population, approximately 5.1 billion people, turn to plants as primary medicines.

This tremendous demand for medicinal plants and their preparations fosters rich opportunities for individuals, communities and commercial entities all along the chain of trade. From cultivation to harvesting, processing and marketing, we have the chance to simultaneously provide safe, beneficial plant-based remedies to meet growing market

demand, and to preserve and promote environmental sustainability and the economic stability of indigenous native cultures.

THE CASE OF JEEVANI

Near the tip of the Indian subcontinent in the town of Palode, The Tropical Botanical Garden & Research Institute is home to a world-class collection of tropical plants, and a center of busy research into the medicinal applications of many south Indian species. I had heard about the Institute through a widely publicized project conducted by Dr. Rajasekharan, head of the Institute's ethnomedicine division. The project, which resulted in the marketing of a formula called Jeevani, was the first in India in which a percentage of sales went to natives from whose tradition the central herbal ingredient originated. In an area surrounded by verdant hills, singing birds and the fragrances of flower blossoms, the Institute sits like a lustrous jewel in the crown of that region.

Dr. Rajasekharan shared the story of his collaboration with the Kani people, a hill tribe whose medicinal plant knowledge has led to the development of Jeevani (Rajasekharan, 1999). "Two of us from the Tropical Botanical Gardens were hiking in the Agastya Hills with a couple of members of the Kani tribe back in 1987. The conditions were a bit difficult, with steep climbing. We were finding it very difficult to keep going, but the tribespeople did not seem even the slightest bit fatigued. We asked them how they kept their energy going, and they showed us some small green berries which they said gave them energy. We had seen our guides chewing these along the way. I chewed a small handful, and right then I felt a sudden flush of energy and strength."

Dr. Rajasekharan knew that the plant had real sales potential if it proved to be safe. The berries came from *Tricopous zeylanicus*, a plant the Kani call Aarogyappacha. The Tropical Botanical Garden and Research Institute researched the plant, which, to their ability to determine, grows only in the hills of Kerala province. Working with a company called Arya Veda Pharmacy, the researchers devised a tonic formula called Jeevani – which means source of life. "It took us eight years to research and develop a product that we knew was safe and effective for promoting energy and relieving fatigue," explained Dr. Rajasekharan. Jeevani contains ashwaghandha (*Withania somnifera*), black pepper (*Piper nigrum*), a couple of other herbs, and *Tricopus zeylanicus*, the green, energy-imbuing berry of the Kani tribe. The product comes in granules. You take a half-teaspoon of this, mix in hot water or hot milk, and drink.

In accordance with a 1992 United Nations Convention on Biological Diversity, the institute decided to share profits from the Jeevani product with the Kani tribespeople. "We knew that we were doing the right thing," says Institute director, P. Pushpangadan. Doing the right thing so flew in the face of common practice that the project made international news. In most cases, native people around the world are exploited for their medicinal plant knowledge, typically receiving little or nothing in return. For the Kani, pay day has already come, if modestly. The Kani received their first payment of \$12,500 in 1999, with further proceeds following on an annual basis.

MEDICINES OF THE TODA

A few hours to the north of the Agastya hills lie the Nilgiri Hills. Also known as the Blue Mountains, the Nilgiris are the second oldest set of mountains in India. There Ooti is the site of the first Indian hill stations, a cottage-filled enclave established by the British to escape the suffocating heat of the plains during summer. The Nilgiri Hills cover 2542 square miles of hills, forests and lakes, with a high point, Dodabetta Peak, of just over 8500 ft. The hills are home to scenic views, lush tea plantations and aromatic eucalyptus groves. Our primary destination in Ooti was the JSS College of Pharmacy, where researchers are fulfilling the difficult task of chronicling the medicinal plant use of small groups of tribal hill natives. In doing so, they have become one of the most distinguished repositories of medicinal plant information in India.

In the Nilgiri's, five tribal groups still live separate and distinct from the rest of integrated Indian society. The Todas, Kotas, Kurumbas, Irulas, and Paniyas, are virtually

unknown outside of India, and are little known within the country. With a combined population of approximately twenty thousand, these groups are small. Due to a temperate climate, twice yearly monsoons and varying altitudes, the Nilgiri Hills offer rich and diverse flora.

Medicine experts among the Nilgiri tribes possess broad knowledge of the plants in the hills, and their medicinal uses. These individuals, known as Madhukara, are similar to the shamans of the Amazon rainforest in terms of their breadth of medicinal knowledge. Thus they are profound resources.

“We have spent many years working in and among the Madhukara,” explained cheerful Dr. Subbaraju (Subbaraju, 1999). As head of the JSS Department of pharmacognosy, he heads up investigation into plants, their traditional medicinal uses, their chemical constituents and their biological activity. “This work is very important to us, and we have made strong progress in preserving much of this valuable plant knowledge.”

It is easy to underestimate the profound nature of the work Dr. Subbaraju describes, due to his mild, humble manner. Already the college has identified three hundred indigenous medicinal plants, along with their correct botanical names and parts used. Subbaraju’s team has analyzed the chemical constituents of many of these plants, and has conducted extensive studies on their biological activity.

In many instances, the plants used among the hill tribes of the Nilgiri region are the same as those employed in the three traditional systems of Indian medicine – Ayurveda, Siddha and Unani. But some are unique medicines to that region. Dr. B. Suresh, Principal of JSS College, has published papers in numerous journals on the college’s findings, and speaks at conferences all over the world. “Our goal at the JSS College of Pharmacy is to advance the field of pharmaceutical knowledge. Plants are our greatest sources of medicines. Even today, up to seventy-five percent of drugs have their origins in plants. The knowledge of the Madhukara, the tribal medicine men, must be as fully captured as possible before it is lost. We are dedicated to achieving that goal.”

The library at JSS College contains hundreds of volumes on regional medicinal plants and their uses. Many of the herbal formulas used by the Nilgiri tribespeople have been studied in-depth, and are the subjects of entire published works published by the college. Some of the more valuable formulas chronicled in this way may eventually be developed as botanical products for the world supplement market.

The scientists at JSS College told us they have been astounded by the sophisticated understanding of the tribal peoples. For example, the tribal people boil some herbs in buffalo milk rather than cow’s milk to make medicines. Somehow they had discovered what the chemists knew only after modern analysis: that certain herbs contain fat-soluble active compounds which are extracted far more efficiently by fatty buffalo milk, compared with less fatty cow’s milk. “We have also discovered that the tribal people have figured out certain methods of time release for particular herbs,” Subbaraju revealed. “Actually their understanding of plants and how they work is quite profound. Most importantly, they know how to heal a great many ailments.”

Another tribal combination herbal remedy has proved very effective as an anti-diabetic formula, and is now undergoing development at JSS College as a medicine. It contains *Gymnema sylvestre*, ayurveda’s famed blood-sugar controlling herb, plus three other effective anti-diabetic herbs unique to the tribes: *Syzygium cumiri*, *Cassia ariculata*, and *Prunus amygdalus*.

A couple of days after our first visit to JSS College, I made my way to a Toda village set on a hilltop on the edge of Ooti, beside giant eucalyptus. There I sat with a priest and guide, B. Inbaraj. “Many Toda have moved away into towns,” he told us. “But many have also stayed, because our way of life is different from the life of other Indians. Everybody here,” he said, sweeping his hand to include the whole village, “is Toda.”

I asked B. Inbaraj about medicinal plants, and this turned into a long conversation (Inbaraj, 1999). As he spoke, his ponderous eyes conveyed the archaic traditions of the Toda. “We have too many.” He told us, pursing his lips. “Almost every plant can be used for something. But some are especially helpful. Do you know we have plants which can

prevent death from a cobra bite? Yes, it is true. We have all used these. Also for bad cuts, to make the skin heal quickly, and for broken bones. In these hills there are no hospitals. We must be the doctors. So we take the necessary plants from nature, and we use them. We cannot cure everything, but most problems, we can fix.”

While I took notes, B. Inbaraj discussed a number of plants and their uses. “Sometimes you get excited too much, and you need to calm down. You can take the flowers of Kungumappu (*Crocus sativus*). Or if you want to make more sex, we use Tutti (*Abutilon indicum*), the seeds and root. For snake bite one of the best plants is Amman Pacharisi (*Euphorbia hirta*), just the whole plant. Also Aattalaree (*Polygonum glabrum*), entire plant as well for snake bite. Pavali too (*Thphorsiap urporea*), entire plant for snake bite too. You see, we must have many plants for snake bites, because we have many snakes. Even for cancer, you know cancer? We use the leaves and roots of Kattamanaku (*Jatropha curcas*). If you take that, many times cancer will go away.”

The Toda are exemplary of indigenous native groups who face encroachment from all sides, exploitation in trade, and loss of plant knowledge as elders die. Yet it is possible that with the assistance of JSS College Of Pharmacy, along with protections from the various government agencies in the Nilgiri Hills, the Toda and other tribes may be able to participate in the development of medicinal plants into finished products, in ways which are truly sustainable.

The simultaneous tasks of the Toda tribe and its protectors are to:

- Inhibit further development into tribal areas.
- Implement sustainable methods of harvesting and cultivation of medicinal plants to maintain healthy populations of these plants.
- Develop appropriate systems for drying and storing medicinal plants.
- Participate in fair trade and royalty-sharing arrangements for their medicinal plants.
- Share their medicinal plant knowledge to interested and supportive plant experts, to ensure the preservation and promotion of that knowledge.

THE CONVENTION ON BIODIVERSITY

In the natural products industry, most companies are not yet even dimly aware of the international guidelines established by the Convention on Biodiversity. These guidelines, established in 1992, and ratified by over 175 nations, establish new mandatory procedures for the use of genetic resources. Specifically as this relates to companies who market botanical products, the Convention On Biodiversity requires fair and equitable sharing of benefits arising out of the exploitation and development of genetic resources. In more simple terms, if a company develops a product from a plant obtained from a country or native group, the company is obligated by international treaty to share both revenues from sales, plus technology, with the origin country/people. This can be achieved either by up-front voluntary compliance, or by post-development legal suit and penalty.

The Convention on Biodiversity establishes a long overdue way of approaching natural resources. Previously, companies have exploited indigenous native resources with little or no payback to the people and nations from which their materials were derived. The Convention on Biodiversity requires that when a natural product (or for that matter a synthetic product modeled on a natural product) is profitably marketed, then both revenues and technology must accrue to the source people/nation.

Companies grappling with this new paradigm will react differently. Some will ignore the convention and pay penalties down the road for flying blind. Others will establish up-front agreements with indigenous people to ensure compliance with international law. In fact, the Convention on Biodiversity represents a tremendous opportunity for companies to establish a high-ground reputation and therefore favorable sourcing relationships with native countries and people, by engaging in proper compliance up front and in a visible way.

The Convention on Biodiversity is with us for keeps, and as international law demands compliance. First and foremost, the convention aims to end bio-piracy,

establishing appropriate payback to indigenous source nations and people. The Convention on Biodiversity also offers marketing advantages for companies savvy enough to comprehend the beauty of this set of guidelines. Compliance, which is mandatory in any case, can be pursued in a way which benefits marketers greatly in terms of both favorable sourcing and market opinion. In this scenario, everybody wins.

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