

ETHNOMEDICINAL PLANTS IN ARUNACHAL PRADESH : SOME TACIT PROSPECTS

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INTRODUCTION

The natural flora and fauna used by the specific ethnic group in the form of medicines in curing and preventing different ailments and diseases are known as ethno-medicine. From time immemorial, indigenous people of different parts of the world have been gathering knowledge about these forms of medicine and medication, which has been handed down for generations merely on verbal tradition. The art is not so compact today because of the allopathic form of modern medicine, which is neither cost-effective nor having easy accessibility at remote Siang villages of Arunachal Pradesh rather still governing the *Adi* way of medication to its people.

The changing aspects of socio-geographic and economic scenario claim a rigorous multi-dimensional study on the problem of starting the farming of ethno-botanical knowledge and plants on ground of their holistic needs of economic, environmental and ethical types. Certainly, the studied area concerned is the world's richest store house of medicinal plants and the people who determine their physique form the totality of nature, still have immense belief on the Mother Nature to a large extent.

It is not the economic botany rather more of pure economics as associated with the tribal medicine; it is at a very young stage of study as far as the studied area concerned. Economic farming of ethno-medicinal plants has been started in the developed nations since a century back and a crude amount of investment coming from both the government and large Pharmaceuticals Companies and Drug Houses is increasing at every minutes of day (Khanuja et al: 2004). Today, the realization comes to our national level planners too from the evidences revealed in the different agro- climatic regions of the world. Instead of having huge potential of farming of medicinal plants at our own, India is presently importing nearly 90% of total demand from the countries like Nepal, Indonesia, Bulgaria and others. The 10th Five Year Plan (2002-2007) has set a goal to achieve a sum of Rupees 4200 crore targeted economy from the cultivation of medicinal plants. And accordingly, Medicinal Plants Boards at the Centre and State level have been constituted under the Ministry of Health and Family Welfare of the Union Government and State Governments respectively, in order to monitor and to provide the overall guidance for the farming of medicinal plants.

STUDY AREA AND METHODOLOGY

The area of this study is Siang region, named after the mighty Siang river, the down stream of the Tsang-po and upper tributary of the Bhrammaputra, comprising of West Siang, East Siang and Upper Siang districts of Arunachal Pradesh located within the geographical ambit of about 27°32' N to 29°20' N latitudinal and 93°48' E to 95°36' E longitudinal extents bordering the historic Mc Mohon line to its north and Demaji district of Assam state to its south. The east and west are fringed by the sister districts Dibang valley and lower and upper Sabansiri, respectively. The topographical feature varies from southern plains to the snow clad mountains in the north. The area is located in the subtropical temperate zone with forest coverage of about 63% of the present territorial occupancy, inhabited by 224470 people at a rate of density of 12.12 people per km² to its total geographical area of 18518 km². The indigenous people is known as the *Adi*, a Mongoloid racial community originated with the Tibeto-Burmese linguist genealogy (Pandey and Tripathy:1997), leads the livelihood basically on forest resources hitherto. Apart from hunting, gathering, fishing and other related

activities associated with the forest resources, the *Adis* use to practice *Adiavik*, known as the shifting cultivation or *Jhum* in the Indian logy. Shifting cultivation as a system of cropping practice represents the indigenous form of agriculture being the most commonly and customarily accepted in the region both by virtue of its physical compass and by virtue of heavy reliance of the settlers for their total livelihood. But the practice, which involves cutting and slashing and burning of invaluable forest resources that is hitherto providing a culturally rich bio-diversity of the region, may leads to a severity by courting the extinction of different species of flora and fauna not only having economic values; also it is an alarming rate of subtraction of environmental qualities.

From a general observation and a causal form of oral investigation from the elderly people of the area arising the hope and scope of farming of ethno medicinal plants by which the local farmers may improve their standard of living not only in terms of income generation in the short run, but the practice as proved in the other familiar agro-climatic zones of the world that it could evolve a healthy environment for the mother earth by minimizing the social cost as incurred for *jhumming* and bringing a larger benefit for the society as a whole.

SCOPE OF STUDY

The earliest treatise on Indian Medicine, the *Charak Samhita* (1000 B C) recorded some 340 drugs of vegetable origin and developed the *Indian Materia Medica*. However, since the early 20th Century, rapid extensions of Allopathic system of medication throughout the world generated a huge commercial demand for the pharmacopocial drugs and their products (ICAR: 1992). The actual history of agronomic practice of growing medicinal plants starts form this time. The *Indian Pharmacopoeia* (1966) recognizes some odd eighty-five drug plants grow abundantly and naturally with the prevailing agro-climatic condition in the selected parts of the country. However, no full phased literature on medicinal plants on the studied area is available. As far as Siang region, the land is still a virgin one to the limit of present study. The first ever task of textualization of available medicinal plants in the area was recorded by the Botanical Survey of India in its years long effort. However, the task is yet to be finished because of the difficult terrain and wilderness of the area. Very recently Mibang and Chowdhari: 2003, have recorded the proceedings of the Seminar on Ethno Medicinal Plants of Arunachal Pradesh, where some scholarly works are found. Apart form these, Singh et. al: 2003, and Dhiman: 2003 are also some helpful documentation on medicinal plants of tribal use in general and the studied area in particular. Riba: 2003, has pointed out some relevant socio-economic changes of the tribal life resulted due to a number of reasons, are very much relevant to the context of the present study. However, literature on ethno-medicine is scared as scared for ethno-medicinal plants and economic use of these plants is yet to be revealed in the said region.

Although the ideology of the present study is at the very hypothetical stage, farming of medicinal plants used by the tribal for curing his diseases and ailments is having much economic importance as far as the studied area concerned. The practical evidence of economic farming is yet to be started. The Central Institute of Medicinal and Aromatic Plants (CIMAP) have been carrying on a number of researcher works but Siang region is undiscovered. Very recently, the *Adis* have undertaken the cultivation of medicinal plants successfully in Gagin hills, Lissing hills, Riga-top of Boleng Circle of East Siang District. The District Horticulture Department, East Siang District at Pasighat has undertaken some pilot projects of farming of medicinal plants. It is also providing guidance to the aspiring farmers for introducing the cultivation of medicinal plants, on which they inherited a vast traditional knowledge. An NGO at Mirbuk village at Pasighat has introduced the cultivation of medicinal plants on experimental basis. But private entrepreneurial initiatives of large scale production of medicinal plants, which grow naturally in the study area, are to be found lethargic.

Finding out the economic value of ethno-medicinal plants is a holistic approach indeed and use of those plants as industrial inputs except cinchona and some others is undiscovered to the people. Arunachal Pradesh as a whole and Siang region in particular is

literarily having no industry at all. Although the factor endowment and the existing infrastructure for some industrial setup might set another story, industrial development is still at a slumbering state so it is for any Pharmaceutical Plant and Drug House.

The existing scenario of industrial backwardness retards the tremendous growth prospects of medicinal plants at its commercial use. No doubt, the advanced world realizes the healing touch of ethno-botanical plants to a great extent because this form of medicine is proved to be more cost effective and humane friendly up to the extent of some diseases like Aids and Cancer. Plants having medicinal values used by the Aids are not cultivated. These plants grow naturally with no weeding and no effort at all. They are harvested as per household need at any particular point of time. These plants are not so scared so far. A basic hypothesis may gavel that the economic farming is also feasible for these plants in the area by these people.

DISCUSSION

The Arunachal economy as a whole is still succumbing to the severe backwardness for a number of factors, which is not to mention within this limited jargon, but it is not very inappropriate to note that the people are backward because they are backward. For Arunachal economy, agriculture is the prime source livelihood and *jhumming* shares the lion part of the total agrarian practice. *Jhum* is not only the form of cultivation but also a way of life for the Arunachalees. Arunachal Pradesh, being a land locked state of Indian Union with her difficult topographical features does not have a vast scope of setting up large industries and with low level of technological base along with other constraints does not provide avenues for rapid expansion of service sector, may gets a boost if the prevailing agricultural resources are used in a planned way. The Government initiatives in these regard is noteworthy that after achieving the statehood status in 1987, the Government has put emphasis on various types of agricultural extension projects and program like animal husbandry, horticulture, agro-forestry and other allied schemes either as the joint venture with the Union Government or with its own limited resources. There is a number of projects has been being implemented as the substitute of *jhum*, a primitive form of agrarian practice, but they are not proved to be very effective ones from the ground of its physical relevance. Therefore, the *jhumming* is going on as it was there at the hundreds of years back. The *Jhumias*, on the other hand, on the way of carrying out the practice are incurring a huge amount of social cost in terms of different types of natural hazards vis-à-vis, soil erosion, flood and others alike, which can't be compensated in the near future (Riba: 2003). In the *jhum* land, the *Jhumias* were once producing merely the amount to sustain rather indulging by the modern life style and other exogenous factors alike, they reduced the spun of *jhum* cycle in order to produce marketable cash crops. Thus, they are courting more and more ruins for their own. It is evidenced from the present study that the cultivation of medicinal plants as an alternative to *jhumming* is viable for Arunachal Pradesh as a whole and the studied area, Siang region in particular, where medicinal plants (Appendix: 1) grow abundantly and the ethnic group associated, the *Adis*, could be better off if they do under take the project, initially with the support of the government and other NGOs, which are working for the upliftment of the society. However, the benefit associated with the farming of medicinal plants in the studied area may be summarized as follows:

1. Medicinal Plants - *An august source of employment generation*: The overall employment scenario in Arunachal Pradesh is as worse as for any other Indian state. Higher growth of population, fast increase of literacy rate along with massive in-migration are the main reasons for increasing figure of unemployment scenario in the state. Since the government with its limited resources is virtually incapable to provide rooms for much employment opportunity in the organized sectors, farming of medicinal plants alike of other agricultural extension programs may open up the scope for unemployed youth to earn their bread from an august source.
2. Medicinal Plants - *An approach to commercialization and modernization of agriculture*: The tribal economy in general is succumbing to its subsistence level hitherto and so it is the Arunachal economy as well. The *Jhumias* are still producing for their own

consumption and no marketable surplus. Although the womenfolk brings a very trivial quantity at the market for raising cash in order to meet the non-food demand, it does not consist a considerable amount of the state Gross Domestic Product (SGDP). On the contrary, if the medicinal plants, which grow naturally in the state could accumulate a fair deal of cash inflow into the economy if they were brought into commercial cultivation applying the modern technology and technological know-how. Thus, the farming of medicinal plants may be an approach to transform the subsistence Arunachal agriculture into a commercialized one. Another way, it is a stir of modernizing the primitive economy as well.

3. Medicinal Plants - *A stimulant for raising the standard of living*: Growing population pressure along with under utilization of natural resources force the mass to live below poverty line. The farming of medicinal plants may compensate the 69% of the total population in the state, who depends on agriculture and more particularly on jhumming, very often succumbs to crop failure due to different sort of natural calamities. The cultivation of medicinal plans would give them readymade cash to purchase their livelihood. Moreover, it is unlike the household need that they get from the jhum land, the farming of medicinal plants, which will attach the people with market mechanism, would give them better understanding of the outer world.
4. Medicinal Plants - *A catalyst for Industrialization*: Perhaps the difficult terrains and low level of infrastructures hinder the process of industrialization at this north-east extremity of India. Medicinal plants on the other hand, an endowed factor along with traditional knowledge of the *Kennapanna ami* (the village medicine men) may be the economic agents to begin the history of industrialization in the land of the rising sun. The existing Citronella plant at Pasighat in East Siang District may raise the hope further.
5. Medicinal Plants - *The source of Government revenue, not bathos*: A recent study shows that medicinal plant worth of millions of US \$ are imported in the country from Nepal annually (Olsen, C.S. et al: 2005). In the era of economic globalization, the phenomenon is virtually contradictory for Indian economy, when we have vast resources for the same products at our own. If the resources are explored properly, import substitution in this arena could save the worthy foreign exchange reserves of millions of dollar. Above all, setting up of industries of medicinal plants will raise huge revenue for the government as well.
6. Medicinal Plants - *Manifestation of indigenous knowledge system*: Primitive local tribal people have vast and extended knowledge about the various medicinal plants available in this region which certainly helps in conserving the biodiversity.
7. Medicinal Plants - *Protecting the patent rights of indigenous plant species*: Participation in the rat race of globalize economic yard might bring some positive results for Indian economy; rather we loose the rights on *Basmati* or *Neem*, the species of our own. Hence, it is a sort of responsibility to protect the patent rights of the invaluable medicinal plants growing exclusively on the Siang soil.
8. Medicinal Plants - *An ecological agent of immense value! Save our only earth*: The jhum practice, no doubt, feeds the Arunachalees although at subsistence level, but the method of practicing jhum is too cruel to the Mother Nature because it involves slashing and burning of the forest resources without realizing the far reaching consequences of the environment (Sachchidananda: 1989). An alarming rate of deforestation leads to severity for the natural vegetation not only for the area concerned, but the frequent flood and other natural hazards alike mostly caused by this massive deforestation program claim lives and property of billions of rupees as a yearly fiesta. '*Modus operandi* of jhumming first leads to ecological disequilibrium by depleting forest cover, aggravating chances of soil erosion to cause removal of top soil, silting river beds and threatening the existence of life itself and all these by putting grain crop as the only levy on the earth' (Sukla: 1982). However, we cannot escape from the reality that jhumming remains here not merely as a farming method but constitutes as *modus vivendi* of people who operate it. Thus, various

alternative projects even did not yield any expected results for the region. Cultivation of medicinal plants, if undertaken commercially, would not only save the natural vegetation but also it is to prevent from flood and other natural disasters caused by the massive deforestation program.

Appendix 1. Some available Medicinal Plants and their uses in the Study Area

Vernacular	Botanical Name	Botanical Feature	Uses for Ailments/Diseases
Rinko	<i>Coptis teeta</i>	Stem Less perennial herbs	Malarial fever, backache, stomach disorder, aphrodisiac
Bangko	<i>Solanam spirale</i>	Shrubs	Stomach pain
Ombe	<i>Zanthoxylum hamiltonianum</i>	Tree	Malaria
Onger	<i>Zanthorilum rhetsa</i>	Tree	Hair cleaning
Takuk	<i>Ficup spp</i>	Perennial tree	Dysentery
Wanco	<i>Coffca bengalensis Roxb</i>	Over green shrub	Stomach disorder
Hinsai	<i>Morus alia Linn</i>	Tree	Inflammation of vocal cord
Marshang	<i>Spilanthes paniculata</i>	Herbs	Tooth-ache
Pazi pereng		Shrub	De-worming cows and bullocks
Namsing Ing		Shrub	Blood clotting
Rukja		Shrub	Dysentery
Ongin		Plant	To cheek blood pressure
Paksum Alang		Plant	Blood dysentery and Diarrhea
Rumbdum	<i>Bulmea fistulosa Kurz</i>	Shrub	Diarrhea
Engee	<i>Alocasia Macorrhiza schoff</i>	Plant	Pain reliever of insect bite
Sengelathang	<i>Solanam xanthicrium</i>	Shrub	Expectorant, tooth-ache
Gobrai	<i>Amaranthus spinusus Linn</i>	Herbaceous plant	Antidote in snake bite; gonorrhea
Phakep	<i>Oxalis corniculate Linn</i>	Creeping herb	Relieves intoxication from wine; Diarrhea
Dolopan	<i>Piper attaenuatum</i>	Creeping herb	Liver and urinary troubles

CONCLUSION

The most urgent need for the Arunachalees is to improve the economic condition for the society as a whole. Arunachal, on the other hand, is having vast unexplored resources, which could be utilized in the on going globalize economic condition so amply. The factor endowment of ethno-medicinal plants as industrial input could bring about a drastic economic change of the Arunachal economy, which is not properly realized till the very yesterday. The governmental role in this context is no doubt immense, but the most important is to **raise the entrepreneurial initiatives with development of proper infrastructure** to utilize this scope.

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