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Study to assess high demand and high commercial value Medicinal Plants of Jammu and Kashmir India - with special focus on routes of procurement and identification

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Abstract:
Despite ancient nature of the tradition, medicinal plants still form the basis of traditional or indigenous health systems and are reported by the World Health Organization (WHO) to still be used by the majority of the populations in most developing countries. Medicinal and aromatic plants (MAPs) play a significant role in meeting the demands of the traditional medicine markets which are found both domestically in the producing and in overseas markets. Demand for a wide variety of wild species is increasing with growth in human needs, numbers and commercial trade. With the increased realization that some wild species are being over-exploited, several agencies are recommending that wild species be brought into cultivation systems. The present pharmacognostical study was conducted with the objectives to assess the high demand and high commercial value Medicinal Plants in Jammu and Kashmir and to assess the source of identification of Medicinal raw herbs in Jammu and Kashmir. The study was conducted by randomly selecting 10 districts of two provinces (Jammu and Kashmir) of Jammu and Kashmir. The study was aimed at distributors, retailers and traders of raw herbs and Medicinal Plants. The study was carried out thorough a team of experts who visited the traders of raw medicinal herbs in the identified areas of study. Their feedback was recorded in the form of a questionnaire designed for the said purpose. It was observed that the trade of raw medicinal herbs in J&K is haphazard and erratic with negligible authoritarian control. The high demand species are distinctive with their local availability and the popularity of the herb is directly proportional to availability of the herb in the area. The source of identification of herbs is also erratic, with no expert identification.

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Introduction

Plants have been used since ancient times to heal and cure diseases and to improve health and wellbeing. Despite ancient nature of the tradition, medicinal plants still form the basis of traditional or indigenous health systems and are reported by the World Health Organization (WHO) to still be used by many populations in most developing countries.

Medicinal and aromatic plants (MAPs) play a significant role in meeting the demands of the traditional medicine markets which are found both domestically in the producing and in overseas markets. Trade in medicinal plants is difficult to estimate accurately because much of the local trade is either unrecorded or poorly classified and because medicinal plants are also used in non-medicinal end-uses and not reported separately. Domestic trade is poorly recorded. Rising global interest in medicinal plants has also created a sustained and largely "underground" trade in plant materials, many of which are being collected in LDCs in an unregulated manner, resulting in indiscriminate harvest of wild varieties and serious damage to biodiversity. It is therefore, not possible to assess global trade in all medicinal plants. In addition, official trade statistics either do not identify the plants individually or do not separate their medicinal use from other usage. [1,2,3]

Demand for a wide variety of wild species is increasing with growth in human needs, numbers and commercial trade. With the increased realization that some wild species are being over-exploited, many agencies are recommending that wild species be brought into cultivation systems. [4] The annual demand of botanical raw drugs in the country has been estimated at 3,19,500 MT for the year 2005-06. This estimate reflects synthesis of data related to estimates of consumption of botanicals by the domestic herbal industry, the rural households and the volume of botanicals recorded in the export during the year 2004-05. [5]

It is estimated that there are around 30541 Medicinal plant species found across the three divisions of the State. While Kashmir division accounts for around 3000 such species, Jammu and Ladakh account for 500 and 880 respectively. While unscientific and indiscriminate harvesting techniques have pushed most of these species to the brink of extinction, absence of reliable market information has been an impediment in the management of Medicinal plant resources and efforts of promoting mass cultivation of natural herbs in the state. [6] The World Health Organization (WHO) has estimated the present demand for ethno-medicinal plants is approximately US $ 14 billion per year (Sharma, 2010). The demand for medicinal plant based raw materials is growing at the rate of 15 to 25% annually, and per an estimate of WHO, the demand for ethno-medicinal plants is likely to increase more than US $ 5 trillion in 2050. [7, 8] Excessive anthropogenic pressures have been identified as the main causes of decline in the population and availability of the medicinal plants in the Himalayan region (Samant *et al.* 1998). With increasing demand and renewed global interest in traditional ethnopharmacy, coupled with the increasing preference for natural substances in the healthcare system, the natural stock of medicinal plants of Himalayas is under tremendous pressure (Samant *et al.* 1998). [9]

Encouraging commercial cultivation is vital for the success of medicinal plants sector to meet out the ever-growing demand for temperate medicinal plants as this wealth has been depleting continuously since last two decades in their natural habitat. [10] As Per EXIM study, there are 880 medicinal plants species involved in all India trade. Of this, 48 species are exported and about 42 spices are imported. Another survey conducted by the Ministry of Environment and Forests, Government of India, reveals that there are over 8000 species of medicinal plants grown in the country. [11]

The demand for medicinal plants in India to meet both domestic and export markets was projected to increase at about 15−16 percent annually, between 2005 and 2010. [12] India, is on the second place of the world's most important source countries, exported annually on average 40,400 t of pharmaceutical plants valued at 61.7 million US$. The exports fluctuated between 31,000 t and 49,000 t during the period 1991- 2003. The country exported to at least 95 countries. The main destinations were the USA and Europe. [13]

Objectives

Keeping in view the increase demand of Medicinal Plants the current study was conducted with the objectives: a) to assess the high demand and high commercial value Medicinal Plants in Jammu and Kashmir India, b) to assess the routes of procurement of raw Medicinal Herbs in Jammu & Kashmir India, c) to assess the source of identification of Medicinal Raw Herbs in Jammu and Kashmir India.

Methodology

10 districts of two divisions (Jammu division and Kashmir Division) of Jammu and Kashmir State India were selected by randomization for the study. The study was aimed at distributors, retailers and traders of raw herbs and Medicinal Plants. 76 retailers/Distributors/traders of Medicinal Herbs were covered under the study. The study was done thorough a team of experts who visited the traders of raw medicinal herbs in the identified areas of study. Their feedback was recorded in the form of a questionnaire designed for the said purpose.

OBSERVATIONS & RESULTS

High demand species of the area

1. **Kashmir Division**

The data procured from 5 selected districts have shown following trends with respect to the demand of species in the Area. The species include all whether found in the area or not. Following species were observed to be in high demand in at least 4 out of 5 districts:

S. No.	Common Name	Botanical Name	No. of Districts where it is in High demand
1.	Gowzaban	*Borage officianalis*	5
2.	Asal us soos	*Glycirrhiza glabra*	5
3.	Sapistan	*Cordia latifolia*	5
4.	Unab	*Zizyphus jujube*	5
5.	Banafsha	*Voila odorata*	5
6.	Behidana	*Cydonia oblonga*	4
7.	Gul e Zoofa	*Hyssopus officinalis*	4
8.	Gul-e-Surkh	*Rosa damscenia*	4

Following species were observed to be in high demand in at least 2 or 3 out of 5 districts:

S. No.	Common Name	Botanical Name	No. of Districts where it is in High demand
1.	Parsianshan	*Adiantum capillus*	3
2.	Tukhm e Khiar	*Cucumis sativus*	3
3.	Tukhm e Kharpaza	*Cucumis melo*	3
4.	Kalonji	*Nigella sativa*	2
5.	Mako	*Solanum nigrum*	2
6.	Kasni	*Cichorium intybus*	2
7.	Saffaron	*Crocus sativus*	2

The other aspect of the research was to observe the trend of indigenous species prevalent in the area or the division. Following observations were found during the study in the same districts in Kashmir Division: Following species were observed to be in high demand in at least 4 out of 5 districts:

S. No.	Common Name	Botanical Name	No. of Districts where it is in High demand
1.	Gowzaban	*Borage officianalis*	5
2.	Banafsha	*Voila odorata*	5
3.	Gul e Nelofer	*Nymphaea rubra*	5
4.	Ustukhudoos	*Prunella vulgaris*	5
5.	Behidana	*Cydonia oblonga*	5
6.	Kuth	*Sausseria costus*	4
7.	Patris	*Aconitum heterophyllum*	4
8.	Saffaron	*Crocus staivus*	4
9.	Gul-e-Surkh	*Rosa damscenia*	4

Following species were observed to be in high demand in at least 2-3 out of 5 districts:

S. No.	Common Name	Botanical Name	No. of Districts where it is in High demand
1.	Kasni	*Cichoria intybus*	3
2.	Khaksi	*Fumaria officianalis*	3
3.	Afsanteen	*Artemesia absinthum*	3
4.	Ustukhudoos	*Prunella vulgaris*	2
5.	Tukhm e Kharpaza	*Cucumis melo*	2

2. Jammu Division

The data procured from 5 selected districts have shown following trends with respect to the demand of species in the Area. The species include all whether found in the area or not: Following species were observed to be in high demand in at least 4 out of 5 districts:

S. No.	Common Name	Botanical Name	No. of Districts where it is in High demand
1.	Amla	*Emblica officianalis*	5
2.	Harad	*Terminalia chebula*	5
3.	Ashwagandha	*Withania somnifera*	5
4.	Arjun	*Terminalia arjuna*	5
5.	Baheda	*Terminalia bellirica*	4
6.	Banafsha	*Viola odorata*	4
7.	Chiraita	*Swertia chirata*	4
8.	Gilo	*Tinosporia cordifolia*	4

Following species were observed to be in high demand in at least 2 or 3 out of 5 districts:

S. No.	Common Name	Botanical Name	No. of Districts where it is in High demand
1.	Behidana	*Cydonia oblonga*	3
2.	Brahmi	*Bacopa monnieri*	*3*
3.	Kutki	*Piccrorrhiza kurruoa*	*3*
4.	Tulsi	*Ocimum sanctum*	*3*
5.	Mulethi	*Glycerrhiza glabra*	*2*
6.	Satavar	*Aspargus racemosus*	*2*
7.	Kharkhask	*Terribulis terristris*	*2*

The other aspect of the research was to observe the trend of indigenous species prevalent in the area or the division. Following observations were found during the study in the same districts in **Jammu Division.** No information regarding high demand indigenous Medicinal Plants was found in Jammu district.

Following species were observed to be in high demand in at least 2,3 or 4 out of 4 districts:

S. No.	Common Name	Botanical Name	No. of Districts where it is in High demand
1.	Banafsha	*Viola odorata*	4
2.	Bala	*Sida cordifolia*	*4*
3.	Brahmi	*Bacopa monnieri*	*4*
4.	Harad	*Terminalia chebula*	*4*
5.	Banafsha	*Viola odorata*	*4*
6.	Chiraita	*Swertia chirata*	*3*
7.	Suranjan	*Colchicum leuteum*	*3*
8.	Behidana	*Cydonia oblonga*	*3*
9.	Saffaron	*Crocus sativus*	*3*
10.	Qust /Kuth	*Sausseria costus*	*2*
11.	Giloe	*Tinosporia cordifolia*	*2*

Following species of Medicinal Plants have emerged as high demand species in the State of J&K including Jammu as well as Kashmir Division.

S. No.	Common Name	Botanical Name
1.	Gowzaban	*Borage officianalis*
2.	Asal us soos	*Glycirrhiza glabra*
3.	Sapistan	*Cordia latifolia*
4.	Unab	*Zizyphus jujube*
5.	Banafsha	*Voila odorata*
6.	Behidana	*Cydonia oblonga*
7.	Gul e Zoofa	*Hyssopus officinalis*
8.	Gul-e-Surkh	*Rosa damscenia*
9.	Parsianshan	*Adiantum capillus*
10.	Tukhm e Khyar	*Cucumis sativus*
11.	Tukhm e Kharpaza	*Cucumis melo*
12.	Kalonji	*Nigella sativa*
13.	Mako	*Solanum nigrum*
14.	Kasni	*Cichorium intybus*
15.	Saffaron	*Crocus sativus*
16.	Amla	*Emblica officianalis*
17.	Harad	*Terminalia chebula*
18.	Ashwagandha	*Withania somnifera*
19.	Arjun	*Terminalia arjuna*
20.	Baheda	*Terminalia bellirica*
21.	Chiraita	*Swertia chirata*
22.	Gilo	*Tinosporia cordifolia*
23.	Brahmi	*Bacopa monnieri*
24.	Kutki	*Piccrorrhiza kurruoa*
25.	Tulsi	*Ocimum sanctum*
26.	Mulethi	*Glycerrhiza glabra*
27.	Satavar	*Aspargus racemosus*
28.	Kharkhask	*Terribulis terristris*
29.	Gul e Nelofer	*Nymphaea rubra*
30.	Ustukhudoos	*Prunella vulgaris*
31.	Kuth	*Sausseria costus*
32.	Patris	*Aconitum heterophyllum*
33.	Khaksi	*Fumaria officianalis*
34.	Afsanteen	*Artemesia absinthum*
35.	Bala	*Sida cordifolia*
36.	Harad	*Terminalia chebula*
37.	Suranjan	*Colchicum leuteum*

HIGH COMMERCIAL VALUE MEDICINAL PLANTS WITH RATES

The current study also aimed to get the information regarding high commercial Medicinal plants with the price for which they are sold in the market. The study involved two aspects.

1. Overall High Commercial Medicinal Plants.
2. Indigenous High Commercial Medicinal Plants.

KASHMIR DIVISION:

Overall high Commercial Value Medicinal Plants

S. No.	Name of the Herb (Common/Local name)	Botanical Name	Rate in Rs	Variation in rates (in Rs)
1.	Mastagi	*Pistacia lentiscus*	10000-22000/Kg	*12000/Kg*
2.	Saffaron	*Crocus sativus*	1000-2000/10gms	*1000/10gms*
3.	Behidana	*Cydonia oblonga*	750/Kg	
4.	Musli	*Chlorophytum borivilianum*	3000/Kg	
5.	Salab Misri	*Orchis latifolia*	3000-6000/kg	*3000/Kg*
6.	Salab Panja	*Dactylorhiza hatagirea*	7000-15000Kg	*8000/Kg*
7.	Banafsha	*Viola odorata*	850-1400/kg	----------
8.	Gauzaban	*Arnebia benthami/ Borage officianalis*	600/kg	--------
9.	Chob e Chini	*Smilax glabra*	800/kg	
10.	Suranjan	*Colchicum luteum*	1150/Kg	
11.	Patris	*Aconitum heterophyllum*	4000/Kg	
12.	Gul e Gauzaban	*Arnebia benthami*	2000-6000/kg	*1000/kg*

High Commercial Medicinal Plants indigenous to the area with Rate in Rs

S. No.	Name of the Herb (Common/Local name)	Botanical Name	Rate in Rs	Variation in rates (in Rs)
1.	Banafsha	*Viola odorata*	4000/Kg	----------
2.	Saffaron	*Crocus sativus*	1000-2000/10gms	*1000/10gms*
3.	Behi Dana	*Cydonia oblonga*	700-1200/kg	*500/kg*
4.	Salab Panja	*Dactylorhiza hatagirea*	7000-15000Kg	*8000/Kg*
5.	Gauzaban	*Arnebia benthami*	2500/kg	----------
6.	Gul e Gauzaban	*Arnebia benthami*	2000-6000/kg	*4000/kg*
7.	Gul e surkh	*Rosa damascene*	400-700/Kg	-------
8.	Kuth	*Sausseria costus*	500-3000/kg	*2500/kg*
9.	Parsianshan	*Adiantum capillus*	1000/kg	------
10.	Jogi Badshah	*Sausseria sacra*	2000/10gms	----------
11.	Ustukhdoos	*Prunella vulgaris*	600/Kg	---------

JAMMU DIVISION:

Not much information was provided in Jammu Division regarding indigenous High Commercial Medicinal Plants. Some High Commercial Value Medicinal Plants with Rate in Rs in Jammu Division are as under:

S. No.	Name of the Herb (Common/Local name)	Botanical Name	Rate in Rs
1.	Ashwagandha	*Withania somnifera*	300/Kg
2.	Saffaron	*Crocus sativus*	2000/Kg
3.	Harad	*Terminalia chebula*	35/Kg
4.	Behidana	*Cydonia oblonga*	700/Kg
5.	Arjun	*Terminalia arjuna*	44/Kg

Following species of Medicinal Plants have emerged as high priced/high commercial value Medicinal Plants species in the State of J&K including Jammu as well as Kashmir Division.

S. No.	Common Name	Botanical Name
1.	Mastagi	*Pistacia lentiscus*
2.	Saffaron	*Crocus sativus*
3.	Behidana	*Cydonia oblonga*
4.	Musli	*Chlorophytum borivilianum*
5.	Salab Misri	*Orchis latifolia*
6.	Salab Panja	*Dactylorhiza hatagirea*
7.	Banafsha	*Viola odorata*
8.	Gauzaban	*Borage officianalis*
9.	Chob e Chini	*Smilax glabra*
10.	Suranjan	*Colchicum luteum*
11.	Patris	*Aconitum heterophyllum*
12.	Saffaron	*Crocus sativus*
13.	Gul e surkh	*Rosa damascene*
14.	Kuth	*Sausseria costus*
15.	Parsianshan	*Adiantum capillus*
16.	Jogi Badshah	*Sausseria sacra*
17.	Ustukhdoos	*Prunella vulgaris*
18.	Ashwagandha	*Withania somnifera*

PROCUREMENT OF RAW MATERIAL OF MEDICINAL PLANTS

Another important aspect of the study was to find the source of procurement of Medicinal Plants for sale in retail.

KASHMIR/JAMMU DIVISION

A total number of 76 Retailers/Distributors/Traders of Raw Medicinal Herbs were questioned

Following data was procured:

S. No.	Source of procurement	Number of retailers/Traders	% age
1.	Distributors	*60/76*	*85%*
2.	Nomads/Farmers	*5/76*	*7%*
3.	Outside State	*5/76*	*6%*
4.	Not specific	*6/76*	*7%*

SOURCE OF IDENTIFICATION OF MEDICINAL PLANTS

The Source of identification of Medicinal Herbs was another aspect of the study. Following data was procured during the study:

KASHMIR/JAMMU DIVISION

A total number of 76 Retailers/Distributors/Traders of Raw Medicinal Herbs were questioned. Following was observed:

S. No.	Source of procurement	Number of retailers/Traders	% age
1.	Self-Identification	*46/71*	*85%*
2.	Stockiest from where the herbs are purchased	*20/71*	*7%*
3.	Traditional Healers	*4/71*	*6%*
4.	Literature on Medicinal plants	*1/71*	*2%*

DISCUSSION

High Demand Species of J&K

It was observed from the study that there is a stark difference between the demand of Medicinal Plants species in two regions of Jammu and Kashmir.

The randomized districts chosen in Jammu region have sub-tropical temperatures whereas in Kashmir all the districts chosen have temperate climates. It is observed that in Kashmir division the high demand species are temperate species like *Borage officianlais*, *Voila odorata, Adiantum capillus* where as in Jammu region the trend of the species in high demand is more towards sub-tropical species like *Emblica officianalis, Terminalia chebula, Withanaia somnifera* etc. The unique trend of high demand species is observed for the first time. The reasons can be best explained in terms of availability of species in the area. The locally available species have been the best curatives since times immemorial, as they can be cheap and readily available. The trend has been static through the ages, even when the local availability of the species has declined, demanding the species to be imported from outside the State.

The quantitative status of the species could not be verified from anywhere as no data was provided by the dealers of the sector.

High Commercial Value Medicinal Plants in J&K

While observing, the data procured for high commercial value Medicinal Plants, it was observed that there are tremendous variations in rates for some of the Herbal species. The difference in rates was observed from one dealer to another in the same district. The variations of some species were as much as Rs 10,000 to Rs 12,000. For Example, Saffaron (*Crocus sativus*) which is a native species of Kashmir Valley was sold between Rs 1000 to 2000 per 10 gms showing a difference of Rs 1000, thus making the quality of Saffaron as suspicious. Another species *Dactylorhiza hatagirea (*Salab Panja*)* is sold at rates varying from 7000-15000 per Kg with a variation of Rs 8000/- which is huge amount. Likewise, variations were seen in the rates of *Pistacia lentiscus* (Mastagi)-Rs 12000/-, *Orchis latifolia* (Salb Misri)-Rs 3000/- etc. In Jammu division, not much data was provided by the dealers in this regard.

The reasons for enormous rate differences may be due to the following reasons:

1. The quality of the Medicinal Herb is not good. Lower the quality lower may be the price. There is no quality regulating authority nominated by the Government in the State for AYUSH raw herbs.

2. In some areas, local herbs from the forests are readily available which are extracted illegally by nomads etc thus bringing the cost of herbs down.

3. The market price of the raw herbs is not stable in National markets, and there are no price controlling authorities at National or State level.

Procurement of Raw Material of Medicinal Plants

Procurement of raw material of Medicinal herbs is highly secretive. 60 out of 76 traders responded that they procure the Medicinal Plants from local distributors. When the same question was put to the distributors 5 distributors responded that they procure it from outside State, 5 responded that they procure it from local Nomads and cultivators, and 6 distributors didn't respond at all to the query.

It is obvious from the study that the trade of Medicinal Plants is unregulated, with the channels of procurement highly secretive. Even the procurement from outside state has no legal basis as there is no licensing authority regulating the import of Medicinal Plants in the State. Locally available herbs are procured from the Forests, illegally through Nomads and local villagers resulting in endangering these high commercial Medicinal Plants. Only in one or two places the procurement is from the cultivated herbs but is very rare, and only some herbs can be available through this method, as developing agro-techniques of some rare herbs is very difficult. The procurement of raw herbs is qualitatively as well as quantitatively unregulated and unrestricted resulting in Compromised quality, Unregulated price and a setback to AYUSH promotion.

Identification of Herbs (Dried as Well As Fresh)

The identification of the herbs by the traders is an important aspect in regulating the AYUSH treatment through raw herbs. The study found that the identification of herbs is discreet with 90% of the respondents answering that they identify the herbs themselves without any expert interference. Many traders, distributors are from business class with little or no education about the Medicinal Plants. Whatever is identified by them becomes the entity to be sold as that species. Although during the study it was found that some Medicinal plants were wrongly identified and sold like Chiraita (*Swertia chiraita*), is Kalmegh (*Andrographis panniculata*) identified by the PI at RRIUM Srinagar. And what is amazing that the two species are vastly different with respect to the agro-climates in which they thrive. Chiraita is a high altitude Medicinal Plant whereas Kalmeg is sub-tropical medicinal Plant, needless to count on Medicinal properties of the two Medicinal Plants. About 5% of the respondents replied that they get these identified from traditional healers.

Although traditional healers may be an experienced lot, but still there is a difference between an expert of taxonomy and traditional healer and a botched-up identification is possible. About 3% of the respondents replied that they identify through literature on Medicinal Herbs. Again, the question comes into place that unless there is an expert to guide it is very difficult to identify an herb from literature only, that too when the herb is in dried form.

So again, the same question of unregulated trade comes to fore. A wrong identification of the herb/medicinal plant can lead to deception to consumers and Compromised therapeutics

Conclusion & Recommendations

The trade of Raw medicinal herbs in J&K State is haphazard and erratic with negligible authoritarian control. The high demand species are distinctive with their local availability and the popularity of the herb is directly proportional to availability of the herb in the area. The source of identification of herbs is also erratic, with no expert identification. Following are some recommendations from the results of the study:

Short Term:

1. Following high demand species of Medicinal Plants are recommended to be included in list of prioritized species issued by National Medicinal Plants Board Ministry of AYUSH Government of India.

S. No.	Common Name	Botanical Name
1.	Gowzaban	*Borage officianalis*
2.	Gauzaban	*Arnebia benthami*
3.	Unab	*Zizyphus jujube*
4.	Gul e Zoofa	*Hyssopus officinalis*
5.	Gul-e-Surkh	*Rosa damscenia*
6.	Parsianshan	*Adiantum capillus*
7.	Tukhm e Khiarein	*Cucumis sativus*
8.	Tukhm e Kharpaza	*Cucumis melo*
9.	Kalonji	*Nigella sativa*
10.	Kasni	*Cichorium intybus*
11.	Saffaron	*Crocus sativus*
12.	Gul e Nelofer	*Nymphaea rubra*
13.	Ustukhudoos	*Prunella vulgaris*
14.	Khaksi	*Fumaria officianalis*
15.	Afsanteen	*Artemesia absinthum*

2. The registration process of retailers/traders/ distributers of raw herbs as well as AYUSH medicines should be taken up on priority basis.

3. A licensing authority be nominated, which can issue licenses to the traders for procurement of raw herbs from outside state. The authority will also regulate the quantity of Medicinal Plants imported to the State.

4. Training programs for registered traders of the sector should be taken on regular basis. The trainings should focus on identification of raw herbs and the promotion of legal routes of trading.

Long Term:

1. A regulatory body be formulated with representatives of following departments:

   a. Indian Institute of Integrative Medicine J&K.

   b. Agricultural Universities of the State.

   c. Forest Department J&K.

   d. J&K State Medicinal Plants Board

The main functions of the body will be:

i) Quality control of raw herbs.

ii) Proper identification.

iii) Sealing illegal routes of trade.

iv) Regulating the channels of trade

v) Promoting cultivation of High demand species to fill up the demand of local market.

2. A price regulating authority for Medicinal Plants be constituted at a National Level by Ministry of AYUSH Government of India, so that an uniformity is established on the rates of Medicinal plants with minimum variations.

3. Survey of High demand species be taken on annual basis to assess the variations for the demand of species, and accordingly species may be recommended for cultivation in the area.

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