**Api Nampa Conservation Area Office**

# Assessment of Key Traded Wildlife Species (Medicinal and Aromatic Plants) in ANCA

## दुई शब्द

दार्चुला जिल्लाको उच्च पहाडी तथा हिमाली क्षेत्रलाई समेटेर अपी नाम्पा संरक्षण क्षेत्र स्थापना गरिएको छ । यो क्षेत्र व्यापारिक महत्वका जडीबुटी एवं गैह्रकाष्ठ वन पैदावरको लागि प्रसिद्ध छ । दार्चुला खाद्ध्यान्न कम उत्पादन हुने जिल्ला हो र यंहाका विपन्न परिवारको आयआर्जनको प्रमुख श्रोत जडीबुटी संकलन र तिनको बिक्रीवितरण गर्नु रहेको छ । तर जडीबुटीहरु परिपक्व भैनसक्दै संकलन गरिने हुँदा पुनारूत्पादन कम हुँदै गएको छ । यसलाई नियन्त्रण गर्ने तर्फ उचित कदम चाल्न सकिएको छैन । यो समस्याको समाधान गर्न सबैभन्दा उपर्युक्त उपाय भनेको नजिकैका सामुदायिक वन उपभोक्ता समूहहरुको क्षमता अभिवृद्धि गरी आफ्नो वन क्षेत्र वाहिरको जडीबुटी उत्पादन क्षेत्र समेत संरक्षण गर्न संलग्न गराउन सकिने उपर्युक्त मोडेलको खोजि गर्नु रहेको छ । प्रस्तुत प्रकाशनमा दार्चुला जिल्ला स्थित अपी नाम्पा संरक्षण क्षेत्र भित्र पाईने व्यापारिक दृष्टिकोणले महत्वपूर्ण जडीबुटीहरुको विद्दमान ब्यापार अवस्था तथा जडीबुटीको ब्यापार प्रवर्धनमा सुधार गरिनु पर्ने सुझाबहरु समेटिएको हुँदा यस प्रकाशनले सरोकारवालाहरुमा दार्चुला जिल्लामा पाईने महत्वपूर्ण जडीबुटीहरुको दिगो विकास एवं ब्यापार प्रवर्धनका लागि सहयोग पुग्ने अपेक्षा गरिएको छ ।

(

पशुपति अधिकारी)

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## Executive Summary

Wildlife species may refer to a taxonomic species, an evolutionary significant unit found in the wild. It has wide range of values from ethical, aesthetic to utilitarian value. Plants, animals and its parts have been used for medicinal purposes since time immemorial. The Himlayan region harbours about 12000 species of medicinal and aromatic plants supporting the livelihood of about 600 million people living in the area. MAPs, a subset of non-timber forest products, are one of the major forest resources offering rural communities to generate cash income. At present, 80% of the population in developing countries rely largely on plant based drugs for their health care needs and 30% of the drugs sold worldwide contain compounds derived from plant materials.

Trade in medicinal plants is difficult to estimate accurately because much of the local trade is either unrecorded or poorly classified. Rising global interest in medicinal plants has also created a sustained and largely "underground" trade in plant materials, being many collected in least developed countries in an unregulated manner resulting in indiscriminate harvest of wild varieties leading serious damage to biodiversity. The MAPs of the Nepal Himalaya contains over 1600 species representing about a quarter of the total country's vascular flora, used under different traditional systems including the Ayurveda, Homeopathic, Homeherbal and Amchi medicinal systems.

Majority of the population residing inside ANCA depends on MAPs/NTFPs collection and trade. The major MAPs traded from the regions are Yarsagumba (*Ophiocordyceps sinensis*), Banlasun (*Fritillaria cirrhosa*), Satuwa (*Paris polyphylla*), Chiraito (*Swertia chiraita*), Jatamansi (*Nardostachys grandiflora*), Kutki (*Neopicrorhiza scrophulariflora*), etc. More than 22000 tonnes of MAPs have been traded from ANCA in last four fiscal years of which majority of the portion is exported to India and China.

Preparation of the harvest plan for each MAPs identified and effective implementation in coordination with stakeholders, enterprise development, reducing the number of intermediaries, improvement in post harvest handling, value addition and product presentation promotion are must in the area for development and promotion of MAPs trade in the area for socio economic development of the community.

## Accronyms

| | |
|---|---|
| ANCA: | Api Nampa Conservation Area Office |
| ANCA MC: | Api Nampa Conservation Area Management Council |
| BFIs: | Banking and Financing Insititutes |
| CBOs: | Community Based Organizations |
| DCCI: | District Chamber of Commerce and Industry |
| DNPWC: | Department of National Parks and Wildlife Reserves |
| DoF: | Department of Forests |
| DPR: | Department of Plant Resources |
| GIZ: | The Deutsche Gesellschaft für Internationale Zusammenarbeit |
| GOs: | Government Oragnizations |
| JABAN: | Jadibuti Association of Nepal |
| IUCN: | International Union for Conservation of Nature |
| Kg: | Kilogram |
| MAPs: | Medicinal and Aromatic Plants |
| NCC: | Nepal Chamber of Commerce |
| NEHHPA: | Nepal Herbs and Herbal Products Association |
| NGOs: | Non-Government Organizations |
| NPQP: | Nepal Plant Quarantine Program |
| NTFPs: | Non-timber Forest Products |
| TRAFFIC: | Trade Record Analysis of Flora and Fauna in Commerce |
| UN COMTRADE: | United Nations International Trade Statistics Database |
| WCN: | Wildlife Conservation Network |
| WWF: | World Wildlife Fund |

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## *Introduction*

Plants and/or animals that are not domesticated yet are known as wildlife. Wildlife species may refer to a taxonomic species found in the wild, evolutionarily significant unit, a grouping used in conservation that may refer to species, subspecies, or other groups. More than 8.7 million species live on the planet of which a total of 1.3 million species have been identified and described to date (Shaw, 2019).

Wildlife species has wide range of values form ethical, aesthetic to utilitarian value (Shaw, 2019). Plants, animals and its parts have been used for medicinal purposes since time immemorial. These species and/or its parts are being traded for its aesthetic, food value and/or medicinal value. According to TRAFFIC, an international monitor of wildlife trade created by the World Wildlife Fund (WWF) and World Conservation Union in 1976, the legitimate, international, wildlife industry has an estimated worth of US $300 billion and involves hundreds of millions of individual animal specimens (Englar & Parry, 2007).

## *Trade in Wild species (MAPs)*

It has been estimated that the Himalayan region harbours about 12,000 species of medicinal and aromatic plants, supporting the livelihood of about 600 million people living in the area (Pie, 2001). MAPs are source for variety of products like cosmetics, personal care products, dyes, colorants, dietary supplements, essential oils, medicinal and plant protection products and as intermediates for producing such products. Also plant derived products are safe to use, low cost, renewable and abundant, therefore, triggering huge demand, domestically as well as globally. MAPs, a subset of non-timber forest products, are one of the major forest resources offering rural communities to generate cash income (Perez & Byron, 1999) (Shackleton & Shackleton, 2004). The importance of MAPs is even higher in recent years with the expansion of global herbal market, as Vasisht *et al.* (2016) estimated the annual trade of MAP materials to be US$ 33 billion in 2014. At present, 80 percent of the population in developing countries rely largely on plant based drugs for their health care needs, and the WHO has estimated that in coming decades a similar percentage of the world population may well rely on plant-based medicines. Thirty percent of the drugs sold worldwide contain compounds derived from plant material.

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. Rising global interest in medicinal plants has

also created a sustained and largely "underground" trade in plant materials, being many collected in least developed countries in an unregulated manner, resulting in indiscriminate harvest of wild varieties leading serious damage to biodiversity (FAO, 1993).

### *MAPs (Medicinal and Aromatic Plants) trade in Nepal*

The flora of the Nepal Himalaya contains 10,167 plant species, of which over 7,000 are flowering plants and over 1,600 species are medicinal and aromatic herbs. The herbs, representing about 25% of the total country's vascular flora, are used under different traditional systems including the Ayurveda, Homeopathic, Home herbal (folklore) and Amchi (traditional Tibetan medicine) medicinal systems (Bhattarai, 1996). Thirty percnt medicinal plants of the country occur in the western part of the country (Manandhar, 1990) and about 50% of the plants used as ethno-medicine in Nepal Himalaya (Kunwar *et. al.*, 2015) have been documented. With many of the MAPs gathered from the wild, the collection and sale of MAPs is providing a complementary source of cash for many extremely poor rural households.

Nepal is one of the major suppliers of MAPs to India and China since time immemorial. However, the quantification of trade had started few decades ago when Edwards (1996) estimated 10,000 tons of MAPs from more than 100 species was harvested in and from Nepal. Few years later, Olsen (2005); based on 1997/98 survey, estimated the export of 14500 tons of crude MAPs worth US$ 16 million to India and China. Recently, using the UN COMTRADE data, Ghimire *et al*. (2015) estimated the export of 10770 tons of MAPs worth US$ 60.09 million from Nepal in 2014. Likewise, several other trade-related studies has been conducted in the past few decades that focused on (i) quantifying trade of specific MAP products of a district (e.g., Hertog and Wiersum 2000; Maraseni *et al*. 2006; Koirala *et al*. 2010; Shrestha and Bawa 2013); (ii) listing the traded MAPs of a district without quantification (e.g., Pandit and Thapa 2003; Bista and Webb 2006); or (iii) listing the traded MAPs of Nepal (e.g., Bhattarai and Ghimire 2006). However, there are very few studies (e.g., Olsen 1998; Humagain and Shrestha 2009) that quantify the traded MAPs at district level in Nepal. The comprehensive district level trade studies help to understand the livelihoods implications, estimate the contribution of forest products to local economy and to formulate and design local level development and conservation strategies. Further, studies suggested that most of the MAP species traded in and from Nepal are wild harvested (Olsen & Bhattarai, 2005); (Ghimire *et al.*, 2005) and are considered as common property resource (Pandit & Thapa, 2003). Most of the high-value MAPs are long-lived perennial with slow

growth and show high habitat specificity (Ghimire, 2008). Premature and over-harvesting by uprooting or cutting of whole plant is one of the serious concerns for the sustainability of such species (Ghimire *et al.*, 2008); (Deb *et al.*, 2015). It has been estimated that 85% of medicinal plants of Nepal are harvested from Mid- and far-western regions of Nepal (GIZ, 2011). Far-west Nepal alone contribute about one third of the total traded volume from Nepal (Kunwar *et al.*, 2015).

### *MAPs trade in ANCA*

**Api Nampa Conservation Area (ANCA)**, was established in 2010 by Government of Nepal based on National Parks and Wildlife Conservation Act, 1973 (2029 BS) clause 3. The conservation area is named after the two famous peaks Api and Nampa. ANCA covers an area of 1,903 km2 (735 sq mi) extending in former 21 Village Development Committees of Darchula district. It is surrounded by the Mahakali River in west, international boundary of Tibet in North and is adjacent to Bajhang (eastern part) and Baitadi (southern part) districts in east. ANCA's elevation ranges from 518 to 7,132 m (1,699 to 23,399 ft) at Mt. Api. The main objective of establishing ANCA was to conserve the unique biodiversity and cultural heritage of the area and socio-economic improvement of the local residing inside ANCA.

The major livelihood of local people residing inside ANCA depends on agriculture, collection of medicinal and aromatic plants as well as artisan productions.

The region is origin place of high valued NTFPs and Medicinal and Aromatic Plants (MAPs), extracted and traded in local, national and international market every year. To date 75 MAPs/NTFPs have been identified in the area (ANCA). Among them, the major NTFPs traded from the regions are Yarshagumba (*Ophiocordyceps sinensis*), Banlasun (*Allium wallichii*), Satuwa (*Paris* polyphylla), Chiraito (*Swertia ciliata*), Majhito (*Rubia cordifolia*), Allo (*Girardinia diversifolia*), Jatamansi (*Nardostachys grandiflora*), Ritha *(Mukurossa spendis)*, Dhupi *(Juniperus spps*.), Rock honeybee and several others.

Although more than 75 NTFPs/MAPs have been identified inside ANCA, merely half of the identified MAPs has trade value because of lack of proper market study and processed materials of those species. Also current ANCA management plan and NTFPs harvesting plan of MAPs in ANCA lacks database and harvest plan of each MAPs identified for legal collection and trade. Lack of awareness of the identified MAPs and its market potential among the harvesters and local traders community, proper harvesting and post harvest handling among the harvesters has lead the region with overexploitation leading serious

damage to the MAPs diversity and profound in the area. The official record of MAPs traded from ANCA in last four fiscal years is listed in Annex 1. Bulks of these MAPs are also being traded illegally due to high tax levied by ANCA management council and ANCA according to some informants. The list of MAPs traded from ANCA with respected tax levied by ANCA and ANCA management council is given in Annex 2.

***Trade system***

Majority of the population residing inside ANCA depends on NTFPs collections and trade according to the market demand which is mediated by the local trades who perceives from the foreign traders outside district or Kathmandu based traders. According to questionnaire with local collectors and local traders, the prices gain from the NTFPs sales is uncertain and fluctuate according to the demand by the end users of the products.

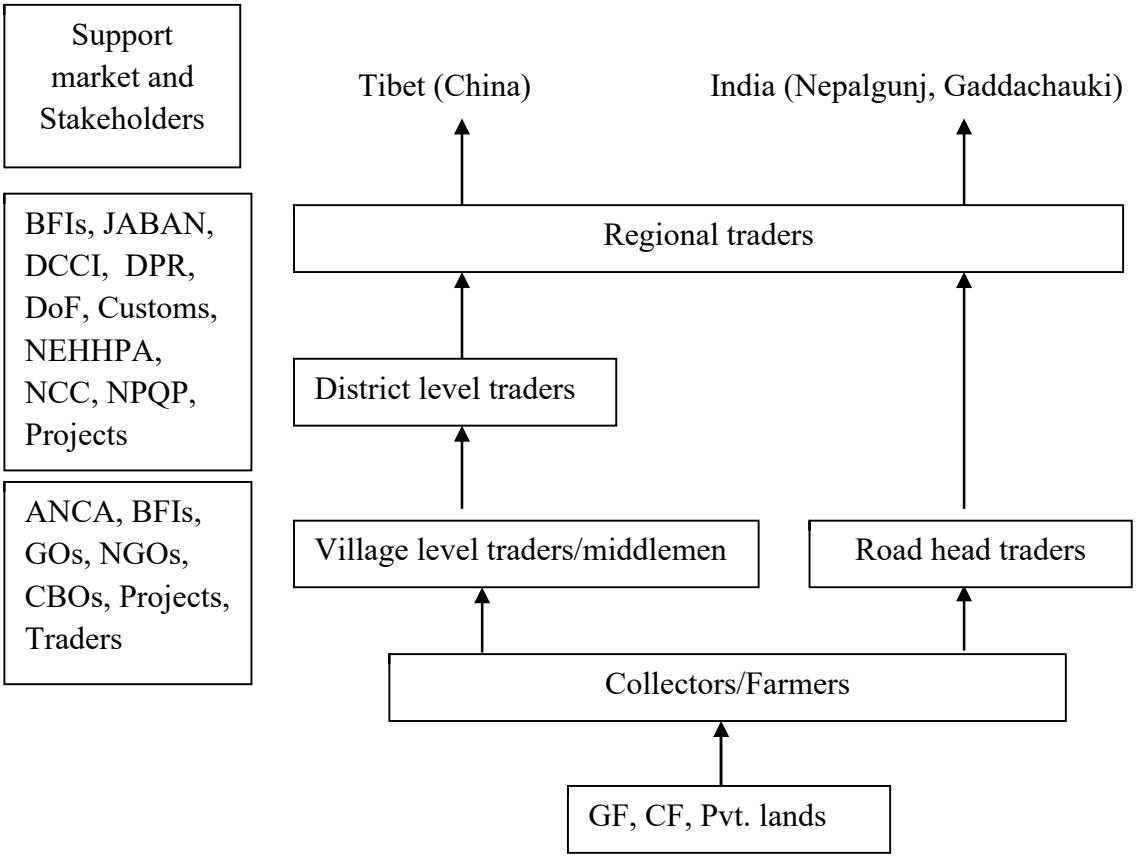


*Figure 1: Physical flow of MAPs from ANCA*

Harvesters collect the wild crafted and cultivated MAP species and perform primary processing, like cleansing, drying and packaging which are then sold either to village level traders which are generally middlemen or to the road head traders. These MAPs by middlemen are then collected at road heads/transits by district level traders which are then

depoted to major transit area collected by regional traders at Nepalgunj, Gaddachauki of Mahnedranagar for export to India or at Kathmandu, Humla for export to Tibet (China) or domestic consumptions. Local/village traders and/or district level traders often have mutual business relationship with harvesters of a specific location. Harvesters often get advance from local traders and/or district level traders. Local traders keep on purchasing MAPs till the volume is enough for a tractor/truck load (depending upon road condition). District level traders store MAPs for little while depending upon the demand by regional traders and the profit accrued.

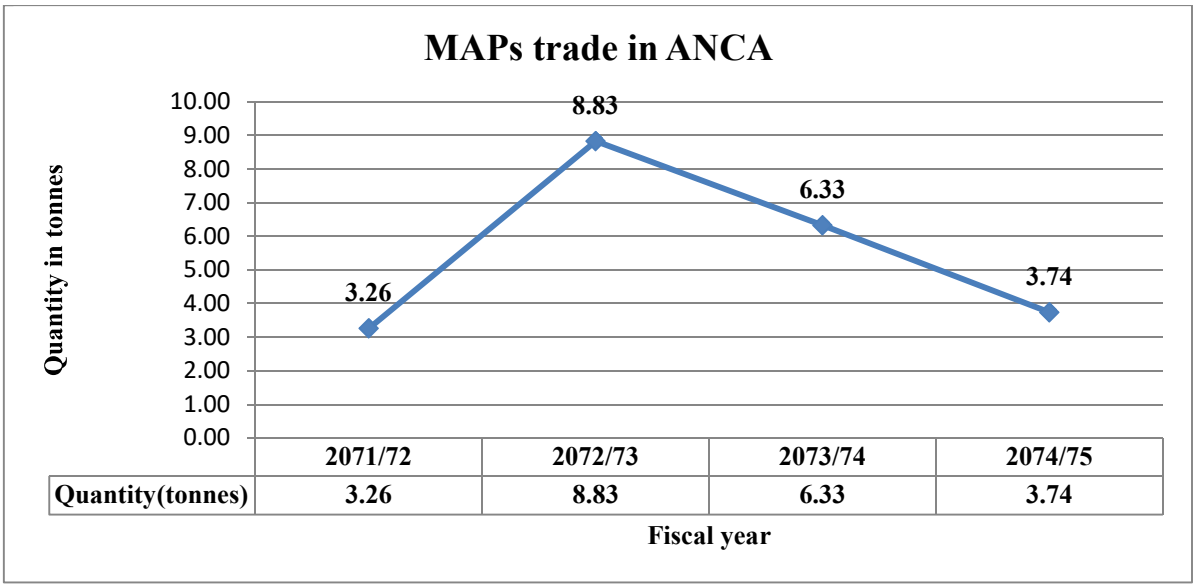


*Figure 2: MAPs trade record of last four fiscal year from ANCA*

### *Way forward*

With diverse climatic and topographic variations, ANCA is rich in diversity of MAPs and NTFPs species and harbours high valued MAPs species. It has huge potential for socio economic development of the people residing inside ANCA and darchula district with regards to MAPs/NTFPs and tourism development.

Preparation of harvest/management plan and effective implementation in coordination with stakeholders for potential MAPs in trade, encouraging and enhancing the development of a more effective trade in medicinal plants, improved marketing of the MAPs/NTFPs, enterprise development and promotion of the complete market chain and value addition through processing are some major steps to be taken. Encouraging and enhancing in establishing a critical mass of cultivable land to guarantee larger consistent supply, reducing the number of

intermediaries involved in the distribution and marketing chain, improvement in post collection handling, value addition and product presentation promotion, research and development on the effect of poor practices on the active ingredients of the selected species and identification of market issues and effective solutions are must in the area for development of MAPs/NTFPs in the area for socio economic development of the community, one of the major objective of ANCA establishment.

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*Annex-1: Quantity of MAPs traded from ANCA in last four fiscal years*

| S.N. | Local name | Vernacular name | Botanical name | Quantity (kg) | | | | Total | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2071/72 | 2072/73 | 2073/74 | 2074/75 | | |
| 1 | Allo | Himalayan nettle | *Girardinia diversifolia* | 8800 | 5700 | 0 | 3800 | **221539.03** | |
| 2 | Amala | Amla | *Phyllanthus emblica* | 0 | 500 | 2820 | 300 | **3620** | |
| 3 | Banlasun | Wild Garlic | *Fritillaria cirrhosa* | 1301 | 40 | 1207 | 5166 | **7714** | |
| 4 | Chiraito | Chirayata | *Swertia chiraita* | 2300 | 2623 | 0 | 100 | **5023** | |
| 5 | Dalchini | Cinnamon | *Cinnamomum tamala* | 200 | 0 | 0 | 0 | **200** | |
| 6 | Guchhi chyau | Morel mushroom | *Morchella conica* | 38.7 | 54 | 0 | 200 | **292.7** | |
| 7 | Jatamansi | Spikenard/Jatamansi | *Nardostachys grandiflora* | 340 | 3550 | 4950 | 0 | **8840** | |
| 8 | Kachurjara | - | *Curcuma zedoria* | 0 | 846 | 0 | 0 | **846** | |
| 9 | Kaulobokra | Kaulo bark | *Persea odoratissima* | 0 | 686 | 0 | 0 | **686** | |
| 10 | Kutki | Kutki | *Neopicrorhiza scrophulariflora* | 0 | 6190 | 5420 | 200 | **11810** | |
| 11 | Pakhenbed | Pashanbhed | *Berginia ciliata* | 2200 | 35935 | 15070 | 8000 | **61205** | |
| 12 | Ritha | Soap nut | *Sapindus mukorossi* | 3000.5 | 8000 | 10700 | 5000 | **26700.5** | |
| 13 | Saadharan chyau | Wild mushroom | | 2735 | 4474 | 654 | 4352 | **12215** | |
| 14 | Satuwa | Satuwa | *Paris polyphylla* | 4920.7 | 1630 | 2697 | 3388 | **12635.7** | |
| 15 | Setakchini | - | *Polygonatum verticillatum* | 0 | 0 | 6200 | 900 | **7100** | |
| 16 | Sugandhawal | Indian valerian | *Valeriana jatamansi* | 150 | 471 | 85 | 100 | **806** | |
| 17 | Tejpat | Bay leaves | *Cinnmomum tamala* | 5500 | 15500 | 12800 | 5000 | **38800** | |
| 18 | Timur | Nepal Pepper | *Zanthoxylum armatum* | 250 | 1100 | 0 | 100 | **1450** | |
| 19 | Yarsagumba | Himalayan viagra | *Ophiocordyceps sinensis* | 833.13 | 1029 | 669 | 764 | **3295.13** | |
| | | | **Total** | **32569** | **88328** | **63272** | **37370** | **221539.03** | |

*Annex-2: List of MAPs with respected tax levied by ANCA office and ANCA Management Council*

| S.N. | Local name | Trade name | Botanical name | Tax levied by | | Remarks |
|---|---|---|---|---|---|---|
| | | | | ANCA office | ANCA management council | |
| 1 | Allo | Himalayan nettle | *Girardinia diversifolia* | 5 | 5 | |
| 2 | Amala | Amla | *Phyllanthus emblica* | 1 | 5 | |
| 3 | Banlasun | Wild Garlic | *Fritillaria cirrhosa* | 15 | 300 | |
| 4 | Chiraito | Chirayata | *Swertia chiraita* | 15 | 5 | |
| 5 | Dalchini | Cinnamon | *Cinnamomum tamala* | 7 | 5 | |
| 6 | Guchhi chyau | Morel mushroom | *Morchella conica* | 300 | 300 | |
| 7 | Jatamansi | Spikenard/Jatamansi | *Nardostachys grandiflora* | 20 | 50 | |
| 8 | Kachurjara | - | *Curcuma zedoria* | 5 | 5 | |
| 9 | Kaulobokra | Kaulo bark | *Persea odoratissima* | 15 | 5 | |
| 10 | Kutki | Kutki | *Neopicrorhiza scrophulariflora* | 15 | 15 | |
| 11 | Pakhenbed | Pashanbhed | *Berginia ciliata* | 5 | 1 | |
| 12 | Ritha | Soap nut | *Sapindus mukorossi* | 3 | 1 | |
| 13 | Saadharan chyau | Wild mushroom | | 5 | 50 | |
| 14 | Satuwa | Satuwa | *Paris polyphylla* | 20 | 100 | |
| 15 | Setakchini | - | *Polygonatum verticillatum* | 5 | 10 | |
| 16 | Sugandhawal | Indian valerian | *Valeriana jatamansi* | 15 | 10 | |
| 17 | Tejpat | Bay leaves | *Cinnmomum tamala* | 2 | 1 | |
| 18 | Timur | Nepal Pepper | *Zanthoxylum armatum* | 8 | 2 | |
| 19 | Yarsagumba | Himalayan viagra | *Ophiocordyceps sinensis* | 25000 | 3000 | |