

Nature's Medicinal Treasure

The Kashmir Valley

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Jammu & Kashmir can become a major producer of medicinal plants provided this sector gets due attention. Medicinal plants of this region hold the potential to completely change the socio-economic status of the state.

ACCORDING to the World Health Organization, over 80% of the world's population relies on traditional forms of medicine, largely plant-based, to meet primary health care needs. With the introduction of scientific procedures, researchers have been able to understand the medicinal and toxic principles present in the green flora. Recent estimates suggest that over 20,000 plant species have known medicinal applications in various cultures and countries, used at one time or another, and this is without having conducted comprehensive research amongst several indigenous communities. At least 8,500 plant species in Asia, among them 3,400 in India, are used as home remedies.

Jammu & Kashmir, apart from its exceedingly beautiful environs, also boasts of a varying degree of agro-climatic zonation—from temperate to alpine. This makes it a veritable bowl of innumerable varieties of medicinal plants. Lying between the sub-tropical (Jammu) to extreme cold (Ladakh) regions, the valley houses around 2200 plant species. Of these, about 480 species are blessed with astounding medicinal abilities to tackle simple seasonal disorders to the most deadly cancers. These species if properly and holistically examined and improved in terms

of biological, medicinal, ecological, and economic benefits could form the base for larger efforts to improve and sustain a vibrant and socio-economically sound medicinal plants sector in the Kashmir valley.

More than 35% of the medicinal plants found in J&K are prescribed in the British pharmacopoeia. Apart from those depicted in the table, there are large numbers of plants growing in the area, in wild or as cultivated, like *Actea spicata*, *Archangelica officinalis*, *Artemisia annua*, *Artemisia maritima*, *Asparagus officinalis*, *Atropa belladonna*, *Brassica*



Feature Article

campestris, *Crocus sativus*, *Digitalis lanata*, *Dioscorea deltoidea*, *Plantago major*, *Podophyllum peltatum*, *Rheum emodi*, and the list goes on. The potential value of these species needs to be identified and popularized in the local, national and international markets.

Raising Economy

In the larger interests of the local people of the J&K region, and for the nation too, it is imperative to focus attention on medicinal plants in view of the value of this group in emerging world markets. The current global market of medicinal plant trade is estimated to be around 62 billion US dollars. However, the global market of Indian herbal drugs, particularly of the Kashmir valley, is yet to be exploited fully.

Only a few plants have been explored for their economic values in the region. The most important example is the famous Kashmiri Saffron (*Crocus sativus*). The traditional cultivation and export of the Kashmiri saffron has helped the people of Kashmir earn millions of dollars. Some other plants of medicinal importance have also been explored for their wider use in raising the economy through their large-scale cultivation by farmers and extraction of medicinally important compounds by researching teams of reputed institutes in the valley. The importance of these plants in the global market can be gauged from the fact that of the 15 top-selling herbs, four plant species generate a business around 860 million dollars alone. The prominent examples are *Inula racemosa* and *Lavender*.

The total cost in terms of productivity as an input and output value for *Inula racemosa* is Rs 50-60 thousands/hectare and Rs 85-95 thousand/hectare respectively. This means an overall benefit of around Rs 0.5 lakh/hectare.

In Lavender, the initial investment is the plantation. Processing for Lavender oil requires a steam distillation unit. The actual benefits are obtained after the second year plantation. The production may continue up to 12-15 years. The net returns will be Rs. 1.0 to 1.15 lakhs/hectare.

Organised Efforts

Very few organizations and institutes are actively working on medicinal plants in order to reveal their hidden economic potential. These organizations and institutes are mostly confined to the region of Srinagar.

Organizations and institutes like the Indian Institute of Integrative Medicine (IIIM-CSIR), Jammu and Kashmir Medicinal Plant Board (JKMPB), Sher-e-Kashmir University

Digitalis lanata



of Agriculture Science and Technology of Kashmir (SKUAST-K), Department of Botany, University of Kashmir, Central Council for Research in Unani Medicine (CCRUM) and J&K MAPs Cooperative Society (JKMAPCS) are actively working in this field.

Some plant species undergoing trials for exploring their economic benefits are *Lavendula officinalis* Chaix, *Rosa damascene*, *Rosmarinus officinalis*, *Hypericum perforatum*, *Artemisia*, *Clarysage*, *Tagetes*, *Pelargonium sp.*, *Epimedium elatum*, *Delphinium*, *Achillea millefolium*, *Melissa officinalis*, *Agaricus sp.*, *Podophyllum hexandrum*, *Picrorhiza kurroa*, *Lavendula angustifolia*, *Ginkgo biloba*, *A. vestita*, *Dioscorea deltoidea*, *Aconitum sp.*, *Inula racemosa*, *Viola odorata*, *Iris sp.*, and *Taxus wallichiana*.

These organizations are also working on isolation and characterization of bioactive endophytic fungi from these frontline medicinal plants of the valley and standardizing *in vitro* regeneration protocols in order to maintain their biodiversity for future use. End-to-end technologies have been developed by institutes like IIIM Srinagar for high-value essential oils like Lavender, Clarysage, Rose, *Mentha piperata*, Geranium, *Artemisia annua*, Rosemary, Lemongrass etc.

The total trade of these high value essential oils is 1000 million US dollars and these have already entered into the UK and USA markets.



Crocus sativus

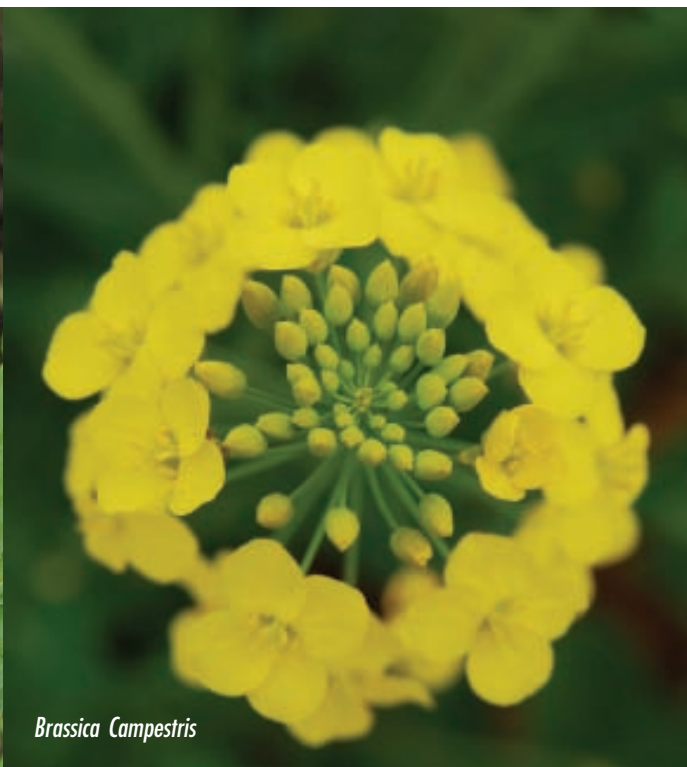
Achillea millefolium

Common Medicinal Plants of J&K

Name	Common Name	Local Name	Parts Uses	Used in curing/act as
<i>Achillea millefolium</i>	Sweet flag	Branjasif	Flower, dry foliage, roots	Asthma, coughing, fever due to bad cold, tooth cavities, toothache and heart ailments.
<i>Aconitum heterophyllum</i>	Aconite	Atees	Roots	Diarrhoea, fever, vomiting, cough, chills and stomachache/anti-tumor.
<i>Aconitum rotundifolium</i>	Indian atis	Patis	Roots	Gastric disorders, high fevers, tooth cavities, toothaches, malaria, diarrhoea, dysentery, chronic enteritis cough, coryza, fever and vomiting.
<i>Acorus calamus</i>	Sweet flag	Wai	Roots	Dyspepsia, chronic diarrhoea, nervous complaints, colds, coughs, hysteria, insomnia melancholy, neurasthenia, vertigo, headache, hypochondria gout, rickets, rheumatism, buboes carbuncles, deaf ears and sore eyes.
<i>Argemone mexicana</i>	Mexican poppy	Datur	All parts	Vomiting, diarrhoea, fainting and coma.
<i>Anagallis arvensis</i>	Red Chickweed	Chari saben	Whole plant	Diphtheria, gout, dropsy, cerebral infections, leprosy and hydrophobia.
<i>Artemisia absinthium</i>	Worm wood	Tethwen	Whole herb	Chronic fevers, swellings and inflammation of liver and sickness.
<i>Bergenia ligulata</i>	Pashanbhedi	Zakhmi-Hayat	Rhizomes	Urinary calculi, dysuria, renal failure, cystitis, crystalluria, abscesses, dysentery and diarrhoea.
<i>Bergenia himalaica</i>	N/A	Pakhanbeed	Roots	Anti-inflammatory and anti-caloric.
<i>Bunium persicum</i>	Black cumin	Zeur	Fruits	Carminative and is a valued spice.
<i>Cannabis indica</i>	Indian hemp	Bhang	Leaves, seeds	Acute depressions and tonic.
<i>Cannabis sativa</i>	Indian hemp	Bhang	Leaves, roots	Analgesic, anaesthetic, anodyne, antiasthmatic, antihypertensive, euphoric, hallucinogenic, hypnotic, laxative, oxytocic, sedative, stimulant and tranquilizer.
<i>Capparis spinosa</i>	Carperbush	Kabra	Roots, bark	Rheumatism, paralysis, toothache, liver and spleen infections and gout pain.
<i>Carum carvi</i>	Persian cumin	Zira siyah	Seeds	Anti-hypertensive, anti-caloric and anti-allergic.
<i>Corydalis adiantifolia</i>	Caraway black	Virkem posh	Whole herb	Skin ailments.
<i>Corydalis gowaniana</i>	Fumewort	Rhus ashud	Roots	Diuretic.
<i>Cuscuta reflexa</i>	Giant dodder	Kuklipot	Whole plant	Anti-inflammatory and psychosomatic.
<i>Datura stramonium</i>	Thorn apple	Dutoor	Leaves, seeds	Prevent baldness, for asthma, bronchitis, epilepsy, radiculitis and stenocardia (Angina pectoris), antiseptic, anodyne, narcotic, sedative, intoxicating.
<i>Delphinium denudatum</i>	Larkspur	Jadwar	Whole plant	Relieves toothache/anti-inflammatory, stimulant and tonic.
<i>Euphorbia helioscopia</i>	Sun spurge	Gursuchel	Whole herb	Cholera and as skin ailment, on wounds and sprains as antiseptic and applied on warts/ Anthelmintic.
<i>Foeniculum vulgare</i>	Common fennel	Baidyan	Leaves, seeds	Cures aerophagia (Duke)/Stimulant, stomachic, carminative, vermicide, diuretic and purgative.
<i>Fritillaria roylei</i>	Himalaya fritillary	Sheethkar	Leaves	Asthma and tuberculosis/Aantipyretic, expectorant, lactagogue.
<i>Helianthus tuberosus</i>	Jerusalem artichoke	Kandmool	Roots	For diabetic patients.
<i>Heracleum candicans</i>	Folla, Heracleum	Krandel	Roots	Anti-leucodermal.
<i>Hyoscyamus niger</i>	Henbane	Ajwain khusani	Seeds	Asthma, whooping cough, spasmodic condition of muscles, diabetes and hallucination/Anti-pasmodic, sedative, narcotic, anodyne and antiseptic
<i>Lavatera cashmeriana</i>	Wild hollyhock	Sazamool	Roots, leaves	Throat problems and as mild laxative.
<i>Mentha longifolia</i>	Horse mint	Pudin	Leaves	Cure rheumatic pains/Carminative, antiseptic and stimulant.
<i>Papaver somniferum</i>	Opium poppy	Khash Khash	Seeds	Narcotic.
<i>Picrorrhiza kurroa</i>	Katuka	Kutki	Roots	Hepato-protective
<i>Viola odorata</i>	Blue violet	Benfasha	Whole plant	Cough and cold



Actea spicata



Brassica Campestris

Recent estimates suggest that over 20,000 plant species have known medicinal applications in various cultures and countries, used at one time or another, and

this is without having conducted comprehensive research amongst several indigenous communities.



Podophyllum peltatum

At least 8,500 plant species in Asia, among them 3,400 in India, are used as home remedies.

Concerns

The knowledge about medicinal plants is rapidly disappearing from the local people of the valley. Most people are not aware about the distribution, types, ecology, methods of management, and extraction of useful properties of these plants. Such information is accessible, in practice, only to a very few people and particularly to those who are engaged in scientific research. In addition, the inadequacy or non-availability of quality standards for herbal medicines is lacking at a larger level in the valley as a whole.

Jammu & Kashmir can become a major producer of medicinal plants provided this sector gets due attention. Medicinal plants of this region hold the potential to completely change the socio-economic status of the state. In view of its unique temperate climatic condition, J&K can become the Himalayan window for the export of these medicinal compounds and oils to the international market.

The strategy for development of these medicinal plant species has to include developing them on the basis of organic farming. More R&D efforts are required towards post-harvest management, quality planting material, chemical standardization and value addition wherever necessary. The government should become a facilitator for the development of this sector by providing necessary assistance. A lot of degraded forests and fallow lands are available in the Valley, which can become hot spots for the cultivation of these plants. There is a need to provide incentives to young entrepreneurs so that they can explore both national and international markets.

At the grassroots level, academic institutes need to further explore the medicinal sector. Besides, for sustainable utilization, mass-scale propagation in nurseries and agricultural fields of such species needs to be encouraged. New techniques like tissue culture have to be employed on a larger scale.

Information regarding commonly grown plants in kitchen gardens and backyards like *Mentha* sp. *Papaver* sp. etc. needs to be passed on to students of primary, middle and secondary schools. The importance of conservation, sustainable utilization and uses of medicinal plants should be incorporated among the book chapters of school children. Awareness should also be created among the inhabitants of the area about the use, value and status of these species.

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