

Review Article

**BOTANICALS AND THEIR USE WITH SPECIAL REFERENCE
TO J&K**

Sabeena Nabi, Shabir Ahmad Rather, Burhan Nabi* and K.N. Qaisar

Faculty of Forestry, SKUAST-Kashmir, Benhama, Ganderbal, J&K, India

*Division of Veterinary Medicine, SKUAST-J

E-mail: nabisabeena@gmail.com (*Corresponding Author*)

Abstract: Use of botanicals or herbal medicines implies substantial historical use, and this is certainly true for many products that are available as ‘traditional botanicals or herbal medicines’. In many developing countries, a large proportion of the population relies on traditional practitioners and their armamentarium of medicinal plants in order to meet health care needs. India has been known for Ayurvedic, Unani, Siddha, Homoeopathy, Tibetan, Amchi, Yoga and Naturopathy medical system practiced by Hakims and Vaidis for nearly 5000 years particularly in Jammu and Kashmir where herbal drugs has a long history of utilization. In early times, the medicines prescribed by these practitioners used to be very cheap and were designated as “common man’s medicine”. These medicinal plants are mostly collected from wild sources and sold under different names. Herbal drugs of montane ecosystems, constituting only those traditional medicines which primarily use medicinal plant preparations for therapy, are in vogue in high altitude regions and offer therapeutic promise which ultimately lead to the discovery of novel drugs for the benefit of mankind.

A botanical is a plant or plant part valued for its medicinal or therapeutic properties, flavor, and/or scent. For example stem bark, root bark, leaves, flowers of *Azadirachta indica* and *Melia azadarch*, needles of *Taxus baccata*, whole plant of *Artemisia* species etc. Herbs are subset of botanicals. Products made from botanicals are used to maintain or improve health may be called herbal products, botanical products, or phyto-medicals. Botanicals are also used as pesticides, insecticides, and other useful extracts derived from plants/trees for the management of human and animal pest organisms (Ivabijaro, 1991).

By definition, ‘traditional’ use of botanicals or herbal medicines implies substantial historical use, and this is certainly true for many products that are available as ‘traditional botanical or herbal medicines’. In many developing countries, a large proportion of the population relies on traditional practitioners and their armamentarium of medicinal plants in order to meet health care needs. Although modern medicine may exist side-by-side with such traditional practice, herbal medicines have often maintained their popularity for historical and cultural

reasons. Such products have become more widely available commercially, especially in developed countries. In this modern setting, ingredients are sometimes marketed for uses that were never contemplated in the traditional healing systems from which they emerged. An example is the use of ephedra (= Ma huang) for weight loss or athletic performance enhancement (Shaw, 1998). While in some countries, herbal medicines are subject to rigorous manufacturing standards, this is not so everywhere. In Germany, for example, where herbal products are sold as 'phytomedicines', they are subject to the same criteria for efficacy, safety and quality as are other drug products. In the USA, by contrast, most herbal products in the market-place are marketed and regulated as dietary supplements, a product category that does not require pre-approval of products on the basis of any of these criteria.

The history of the medicinal plants is as old as the history of human being. The primitive man attempted to cure his ailments with all sorts of materials around him including plants as well as animals. Discovery of their medicinal values was mainly by trial and error. For example, quinine is the drug for curing malaria and amla is effective in curing many diseases of the digestive system, the heart, the respiratory system and skin diseases. Among ancient civilizations, India has been known to be rich repository of medicinal plants. The forest in India is the principal repository of large number of medicinal and aromatic plants, which are largely collected as raw materials for manufacture of drugs and perfumery products. About 8,000 herbal remedies have been codified in Ayurveda. The Rigveda (5000 BC) has recorded 67 medicinal plants, Yajurveda 81 species, Atharvaveda (4500-2500 BC) 290 species, Charak- Samhita (700 BC) and Sushrut Samhita (200 BC) had described properties and uses of 1100 and 1270 species respectively, in compounding of drugs and these are still used in the classical formulations, in the Ayurvedic system of medicine. Unfortunately, much of the ancient knowledge and many valuable plants are being lost at an alarming rate. Table-1 shows the status of core groups of medicinal plants of Western Himalayas.

Inventorisation of herbal drugs used in traditional and modern medicines for a country like India, appears to be a stupendous task, where a number of well established indigenous or traditional systems, including Ayurveda, Unani, Siddha, Homoeopathy, Tibetan, Amchi, Yoga and Naturopathy are practised along with modern medicine for the management of total health care system particularly in Jammu and Kashmir where herbal drugs has a long history of utilization. Plants, especially used in Ayurveda can provide biologically active molecules and lead structures for the development of modified derivatives with enhanced activity and /or reduced toxicity. The small fraction of flowering plants that have so far been investigated

have yielded about 120 therapeutic agents of known structure from about 90 species of plants. Some of the useful plant drugs include vinblastine, vincristine, taxol, podophyllotoxin, camptothecin, digitoxigenin, gitoxigenin, digoxigenin, tubocurarine, morphine, codeine, spirin, atropine, pilocarpine, capscicine, allicin, curcumin, artemesinin and ephedrine among others. In some cases, the crude extract of medicinal plants may be used as medicaments. On the other hand, the isolation and identification of the active principles and elucidation of the mechanism of action of a drug is of paramount importance. Hence, works in both mixture of traditional medicine and single active compounds are very important. Where the active molecule cannot be synthesized economically, the product must be obtained from the cultivation of plant material. About 121 (45 tropical and 76 subtropical) major plant drugs have been identified for which no synthetic one is currently available (Kumar *et al.*, 1997). Hakims and Vaidis prescribe herbal mixtures emphasizing the principal of synergetic activity among the components of plant ingredients in these mixtures. The multiple ingredients in a traditional prescription may include some plant materials which have been selected to address the particular site of pathology, others to stimulate a more generalized immune response, still others to offset side-effects in some of the ingredients, others to increase cellular uptake. This complex approach to pharmacology is based on a concept of “synergetic activity” of multiple components in a traditional formula. In view of the demand of these botanical /herbal mixtures, there has to be a regular supply of medicinal plants to the market. These medicinal plants are mostly collected from wild sources and sold in Jammu and Kashmir market under different names. In early times these medicines used to be very cheap and were designated as “common man’s medicine”. Table-2 shows some valuable medicinal botanicals of J&K (Wadoo, 2005).

Table -1: Status of some important botanicals of Western Himalayas

Botanical name	Trade name	Part used	Present status
<i>Aconitum heterophyllum</i>	Atis	Root	Vulnerable
<i>Arnebia benthamii</i>	Gaozaban	Whole herb	Endangered
<i>Artemisia absinthium</i>	Tethwan	Whole herb	Vulnerable
<i>Atropa acuminata</i>	Brand	Root	Endangered
<i>Datura stramonium</i>	Datur	Whole herb	Vulnerable
<i>Dioscorea deltoidea</i>	Shingli Mingli	Root	Endangered
<i>Ephedra gerardiana</i>	Ephedra	Whole herb	Vulnerable

<i>Inula racemosa</i>	Pushkar	Root	Endangered
<i>Picrorhiza kurroa</i>	Kutki	Root	Vulnerable
<i>Podophyllum emodi</i>	Bankakri	Root	Endangered
<i>Saussurea lappa</i>	Kuth	Root	Endangered
<i>Taxus baccata</i>	Himalayan yew	Bark/Shoots	Endangered
<i>Tribulus terrestris</i>	Meticher kund	Fruit	Vulnerable
<i>Valeriana wallichii</i>	Mushkibala	Root	Vulnerable

Table-2: Some botanicals of J&K and Ladakh, their local name, family, parts used, chemical constituents and medicinal/botanical uses.

Botanical name	Family	Local name	Place	Part used	Chemical constituents	Therapeutic uses
<i>Achyranthes-aspera L.</i>	Amaranthaceae	Putha-kanta	J&K	Seed	Ecodysterone, inokosterone	Abdominal pains
<i>Achillea millefolium L.</i>	Asteraceae	Saigun	Dras	Whole herb	Achilleine, azulenes Coline, trigonelline	Cold, fever, gastritis, Insecticide, bile and liver troubles
<i>Aconitum heterophyllum Wall.</i>	Ranunculaceae	Patis, Kerpoma	Gurez & Zanskar	Root	Heterastine, heterophylline	Expels intestinal worms, used in diarrhea, anti-rheumatic
<i>Aconitum rotundifolium Kar. & Kir.</i>	Ranunculaceae	Cherkhan/Poma karmo	Khardung La	Whole herb	Alkaloids	Headache
<i>Acorus calamus L.</i>	Araceae	Vaigunder	J&K	Rhizome	Calamen, asarone, calamenol	Stomach ache, given against piles
<i>Ailanthus altissima L.</i>	Simaroubaceae	Alamthras bahard kul	J&K	Leaves, root bark	Ailanthone	Epilepsy, asthma, Antiscabies
<i>Anagallis arvensis L.</i>	Primulaceae	Chare-saben	J&K	Whole herb	Glucose, arabinose	Pesticidal, used against lice
<i>Arnebia benthamii Wall.</i>	Boraginaceae	Goazaban	J&K	Leaves	Shikonin, Resin, Essential oils,	Heart ailment, fever
<i>Arnebia euchroma Royle ex Benth.</i>	Boraginaceae	Demok	Zanskar	Root	Shikonin	Cough, profuse hair growth
<i>Artemisia dracunculoides L.</i>	Asteraceae	Sache	Zanskar	Aerial part	Artemisin, scopoletin, capellarin	Throat infection
<i>Atropa acuminata Royle</i>	Solanaceae	Brand	J&K	Root paste, leaf	Belladonna, Hyoscyamine	Rheumatic pain, asthma

				extract		
<i>Bergenia ligulata</i> Engl.	Saxifragaceae	Zakhmi-hayat, pal-pout	J&K	Root paste	Follic- acid, glucose, tannic acid	Wounds
<i>Bergenia stracheyi</i> Hook.f	Saxifragaceae	Gatils	Zanskar	Root paste	Bergenin, beta-sitosterol	Ulcers, cuts and swellings
<i>Colchicum luteum</i> Baker	Liliaceae	Suranjan	J&K	Corms	Colchicine, alk-aloids	Carminative, laxative, rheumatism, liver
<i>Ephedra gerardiana</i> Wall.ex Stapf	Ephedraceae	Chepat, Thayon, cheldymb	Khar-dung La	Leaves, root, stem	Ephedrine, pseudo-Ephedrine	Cough, asthma, blood purifier, used for cleaning of teeth, hepatic diseases
<i>Juniperus communis</i> L.	Cupressaceaea	Sukpa/ Shukcher	Zanskar	Berries	Oxalic acid resin, juniperin	Diuretic, carminative, stimulant in dysmenorrhoea Kidney and skin diseases,
<i>Podophyllum hexandrum</i> Royle	Podophillaceae	Wan-wagun	J&K, Ladakh	Root	Podophyllo-toxin teniposide	Against testicular cancer, small cell lung cancer, lymphomas
<i>Rheum emodi</i> Wall.	Polygonaceae	Pumba-chalan	J&K	Root paste & powder	Rhaponticin, chrysophanic acid	Rheumaic pains, healing of wounds
<i>Sassurea lappa</i> C.B.Clarke	Asteraceae	Kuth	J&K	Root extract	Sassurine, bitter resin contain alkaloids	Stomach cramps, dysentery and joint pains
<i>Taraxacum officinale</i> Weber	Asteraceae	Nunar, jamajunsh a Khursa	J&K, Ladakh	Whole plant, root	Taraxcin, taxacerin	Diuretic, vertilago, head-ache
<i>Taxus baccata</i> L.	Taxaceae	Poshthal	Kashmir	Needles, bark	Alkaloid taxine, taxol, baccatin- 111	Lung cancer, metastatic breast cancer, malignant melanoma, asthma, high fever

It also has scope for scientific investigation on high altitude medicinal plants, their herbal preparations and possible isolation of bioactive compounds explaining the activity of these plants. Major high altitude medicinal plants (HAMPs) with established therapeutic claims are listed below in Table-3 and traditional modern drugs from high altitude medicinal plants (HAMPs) are listed in Table-4 (Kaul, 2010).

Table-3: HAMPs with established therapeutic claims and used in some major ailments

Plant name	Part used	Potent principals	Therapeutic claims
<i>Aesculus indica Colebr.</i>	Seed	Aescin, galactogogue	Anti-inflammatory, anti-microbials
<i>Artemisia annua L.</i>	Whole herb	Artemisinin	Anti-cerebral malaria
<i>Atropa acuminata Royle</i>	Root and leaf	Tropane alkaloids	Anti-cholinergic
<i>Dioscorea deltoidea Wall.</i>	Root	Diosgenin and derivatives	Steroidal activity
<i>Ginkgo biloba L.</i>	Leaf	Flavonoids, ginkgolie	Treatment of cerebral and peripheral circulatory disturbances
<i>Hypericum perforatum L.</i>	Leaf/flower	Hypericin, hyperforin	Anti-depressant, antiviral, inhibits leukemia virus
<i>Podophyllum hexandrum Royle</i>	Root	Podophyllotoxin teniposide, etoposide	Against testicular cancer, small cell lung cancer, lymphomas
<i>Taxus wallichiana Zucc.</i>	Leaf	Paclitaxel	Against ovarian cancer, lung cancer, malignant melanoma
<i>Valeriana officinalis L.</i>	Root	Acid, valepotriats	Sedative

Table-4: Traditional modern drugs from HAMPs

Plant name	Drug name	Therapeutic use
<i>Artemisia annua Linn.</i>	Artemisinin	Anti-malarial
<i>Atropa belladonna Linn.</i>	Atropine	Anti-cholinergic
<i>Colchicum luteum Baker</i>	Colchicine	Anti-gout
<i>Digitalis lanata Enrh.</i>	Digoxin	Cardiac stimulant
<i>Ephedra geraradiana Wall.</i>	Ephedrine	Bronchodilator, antiasthma
<i>Hyoscyamus niger Linn.</i>	Hyoscyamine	Anti-cholinergic

Herbal drugs of montane ecosystems, constituting only those traditional medicines which primarily use medicinal plant preparations for therapy, are in vogue in high altitude regions and offer therapeutic promise. This could ultimately lead to the discovery of novel drugs for the benefit of mankind (Ballabh & Chaurasia, 2011).

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