



TRADITIONAL USES OF MEDICINAL PLANTS OF SUMMER HILL, SHIMLA

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ABSTRACT

Nature has bestowed us a very rich botanical wealth and a large number of diverse plants that are used by different ethnic people for medicinal purpose grow wild in different parts of the country. This knowledge of valued plants has helped the people to develop a sense of responsibility in utilizing the plant resources and also to conserve and pass on the wisdom of plant resource utilization to the prosperity. About 75% of drugs and perfumery products used World-wide are available in natural state in India. Medicinal and ethno-botanical uses of many of these species were documented by various researchers from different parts of the Himachal Pradesh based on the information provided by the local ethnic people. A large number of plants are used

in the traditional system of medicine, grown in wild state under undisturbed habitats in the nature. The present study reports the documentation and ethno-medicinal application of medicinal plants of Summer Hill, Shimla, and Himachal Pradesh.

KEYWORDS: Ethano-botanical uses, Medicinal plants, Shimla, Wild plants, Traditional medicines.

INTRODUCTION

Himachal Pradesh is a hilly state situated in the Western Himalaya with an altitude ranging from 350 m to 7000 m above mean sea level (amsl) and covers an area of 55,673 sq. km. This hilly State comprises a good heritage of medicinal and ethno-botanical flora and natural wealth in the North Western Himalayan region between 30°22'44N to 33°12'44N latitude and 75°45'44E to 79°04'20E latitude. Geographically, the State is divided in to three distinct

regions, the Shivalik or outer Himalaya, mid-hills and the greater Himalaya or high altitude zone. The mid hill region of Himachal comprises regions between the elevation range of 1500 m to 3500 m above mean sea level and includes Shimla district along with other districts. This district is a rich repository of medicinal and aromatic plants and traditional knowledge associated with these plants.

India is one of the 12 mega-diversity countries and comprises of 2 hot spots.^[1] The country has so far 12 established and 12 proposed Biosphere Reserves.^[2] In recent years, there has been an increasing interest in ethno-medicine, mainly due to the renewed interest in traditional herbal medicines. Ancient literature of world on medicines suggests that the primitive people of antiquity and those of earlier centuries have been using several kinds of food and medicinal plants for healthcare.^[3]

Forests are known to meet religious, spiritual, cultural, social and economic needs of human beings and maintain biological diversity and ecological equilibrium of the biome by providing climate buffering and improving pollution conditions is amply clear from the old literature of Indians, Egyptians and Chinese as well as from the folklores and epics of Hindus, Jains, Buddhists, and Vedas, Puranic, Ayurvedic Nighantu, Sushrut and Charak's references.^{[4][5]} The importance of the forests and vegetation cover of the earth cannot be over emphasized in view of rising human and cattle population along with deforestation, environmental degradation, erosion, salinity, desertification, urbanization, Industrialization, climatic changes, water harvesting, biodiversity conservation, and over all, widening gap between demand and supply of timber wood, firewood, pulpwood, forests and non wood forest products-fodder, fibers, resin, gum, medicine uses and other forest materials.^{[6][7]} Notwithstanding, recorded forests area of 77 million hectares in India is about 7% short of recommended area. But, India (Latitude 80⁰4' N to 370⁰6 N; Longitude 680⁰7 E to 97⁰25' W) with great variations in its land forms, soils, climatic patterns, diverse agricultural systems and tremendous ethnic variability is bestowed with rich and diverse forests and floristic wealth including a large number of medicinal aromatic and energy yielding plants plus 20,000 flowering plant^{[8][9]} of which 9000 are economically important, 7500 are medicinal, 3900 are edible, 700 are culturally important, 525 are used for fiber, 400 for fodder, 300 for pesticides, 300 for gums, resins and dye and 100 for perfume.^{[10][11]} Thus, making the documentation of wild plants used by tribals is important to enhance our knowledge about the plants grown by native tribal communities.^[12]

Medicinal plants available in Himachal Pradesh have the *rasayana* properties and used in grey areas of allopathic medicine. Due to lack of knowledge of identification and medicinal values, these plants were unused and destroyed. Taking advantage of tribal and village folks, the merchants of medicinal plants procure all the plants without disclosing the real value at through away prices. The merchants/agents sell these plants in markets at very high prices, making the Indian system of medicine very expensive. If the medicinal plants farming is implemented systematically and a scientific approach are adopted, this will pave way for development of the state in a big way in the near future. Which are extracted by the local's people for ethnic medicinal use, for use in Ayurveda and Tibetan medicines and also for use in modern bio-pharmaceuticals? The state can attain high value addition resulting in higher employment generation and increased income to the people, if propagation of these high value medicinal and aromatic plants is adopted.

Ayurveda, the oldest traditional medicine is mostly deals with the plants. According to world health organization statistics, about 25% of the preserved human medicines are derived from plants and 80% people still depend on traditional system of medicine. It is also estimated by World Health Organization (2006) out of 58 million deaths 2005, 35 million were result of chronic diseases. This will increase by 17% in next 10 years, out of this 17.52% million death in heart diseases, 7.58 million in cancer and 4.5 million in respiratory diseases. Research in going on world-wide in the effectiveness of herbal medicines for chronic diseases like – Cancer, Heart disease, Bronchitis, Autoimmune disorders, Rheumatism, AIDS etc. and drug resistance Malaria, Leprosy, Tuberculosis, Dengue, Plague etc.

Süntar and his coworkers (2010) investigated the *in vivo* wound healing potential of *Hypericum perforatum*.^[13] Researches have been carried on to study the Antibacterial activity of hyperforin from St John's wort, against multi-resistant *Staphylococcus aureus* and gram-positive bacteria.^[14] Studied of the adulterant profile of illicit street heroin and reduction of its precipitated physical dependence withdrawal syndrome by extracts of St John's wort *Hypericum perforatum*.^[15] With this worked on metabolic drug interactions between antidepressants and anticancer drugs: Focus on selective serotonin reuptake inhibitors and *hypericum* extract.^[16] Samadi *et. al.* (2010) worked on the effect of *Hypericum perforatum* on the wound healing and scar of cesarean^[17] Purkayastha *et. al.* (1958) studied the trials of *Albizia lucida* and *Ougeinia dalbergioides* as new lac hosts for the baisaklu crop in Chota Nagpur.^[18] Purohit *et. al.* (1987) worked on physiology of *Ougeinia dalbergioides* and its

morphological variant.^[19] Singh in the year 1982 studied the fodder trees of India.^[20] In the year 1944 Trotter worked on the commercial timbers of India and their uses. Troup studied the silvi-culture of Indian trees in the year 1921.^[21] Uniyal *et. al.* (1992) studied the effect of presoaking in water in germination of *Ougeinia dalbergioides* seeds.^[22] Elizabeth in 1998 studied the Sierra Nevada wildflowers. Norman in the year 1996 studied the Flora of Sierra Nevada.^[23] Teuber *et. al.* (1999) studied the identification and cloning of a complementary DNA encoding a vicilin-like proprotein.^[24] Negi *et. al.* (2011) studied the anti-proliferative and antioxidant activities of *Juglans regia* fruit extracts.^[25] In the year 2009 Van Zyl studied the grafting of walnut *Juglans regia* with hot callusing techniques under South African conditions.^[26]

MATERIALS AND METHODS

Medicinal studies of the plants were done during 12th May to 30th May 2016 covering different areas of Summer Hill. This area lies in Shimla District in Himachal Pradesh the site is 3 km away from the H. P. University. The area is dominated by thick forest of Angiospermic and Gymnospermic plants. Four visits of the area were done to know the diversity of plants growing there. The local people inhabits this area and in the surrounding use various plants growing herein their routine life due to many medicinal values which have been customary to their ancestors.

Collection of plants

The plants were collected from different sites of the area, identified by their local names with the help of villagers. The data on medicinal uses of plants was collected through general conversation with people of the area. The photographs of these plant species were taken during the field visits. Proper data regarding each plant species was collected by assigning botanical and local names along with general description and distribution of each plant species. Collected specimens were maintained by herbarium preparation.

Identification of plants

Identification was done with the help of traditional practitioners, village heads, women folks and the people in the region respected elderly persons, whose empirical knowledge. Occasionally, the people were also taken into the jungles as guide for collection of plant specimens. The plant species were identified consulting the floras and the information on usage of plant species were compared with those of available literature.

Survey regimen

- a. Method(s) of survey — periodic visits along with discussions with local people.
- b. Herbarium preparation methods — Standard methods should be used.
- c. Place of voucher deposition — HRDC, Shimla, H. P. University.

Arrangement of plants

The Ethno-botanically important plants types collected/surveyed include some angiosperms and gymnosperms, shall be arranged per standard classifications especially of Bentham and Hookers for higher taxa.

Ethno-botanical methods of study

Besides the recording of above analysis of scientific and the plants shall be classified into economic medicinal value of plants/ parts edible fiber yielding, timber yielding, oil yielding, healthcare medicines etc shall also be made.

RESULTS AND DISCUSSION

Plant species are arranged in order with their scientific names, species, family, vernacular name, parts used have been enumerated. The active principles and their pharmaceutical properties are also clearly mentioned in Table 1. Photographs of collected plants are shown in figure 2 and 3. Figure 1 the map of India showing Himachal Pradesh. The herbarium sheets are deposited in the HRDC department, H. P. University, Shimla for future records.

Plants and man have been closely associated, inter dependent and interacting since the dawn of human civilization and they have had the tendency to achieve complete harmony with each other. Primitive tribals, aboriginals, rural people, saints, Rishis, sadhus, Maharaj, Giri, Puri and Nath etc. largely depended on plants for the fulfillment of three basic needs of roti, kapdaa or makan. Even today, plants are used by our society in three most important phases of human life — Janam, Paran and Maran (birth, marriage and death). The tribal people of our country are close associates of Mother Nature and true friends of the forests as their life is largely dependent on forest and forest products. Present study lends supports to this contention.

Under the present scenario, the forests (tribals dwelling therein) are under great stress, on account of over exploitation or habitat destruction. The flora and fauna, therefore, are likely to be altered or vanished. Hence, timely investigation of the taxa shall not only increase our

knowledge but also support to follow their proper conservation especially in the context of Himalaya.

To evolve a proper and precise methodology for conserving the ecology, a national biodiversity strategy and action plan (NBSAP) is required. It should cover areas such as natural ecosystems, wild species and their relatives, agricultural ecosystems and domestic species. and varieties. Issues such as conservation, sustainable use, ethical practices and cultural scientific and economic aspects of biodiversity assume importance here in, therefore villagers, NGO's, scientists, ethnic groups and Government.

A total of 15 plant species covering the different pharmaceutical properties were reported. Few plants of this locality possess potential of better economic exploitation. It is observed that the plants are overexploited for preparation of the drugs. The young plants are uprooted for collection of the rhizomes, roots and even bulbs. Thus, the population in wild condition is under threat. Since these species are used in most parts of the world, and have potential for bio-prospecting, there is urgent need to protect and conserve them.

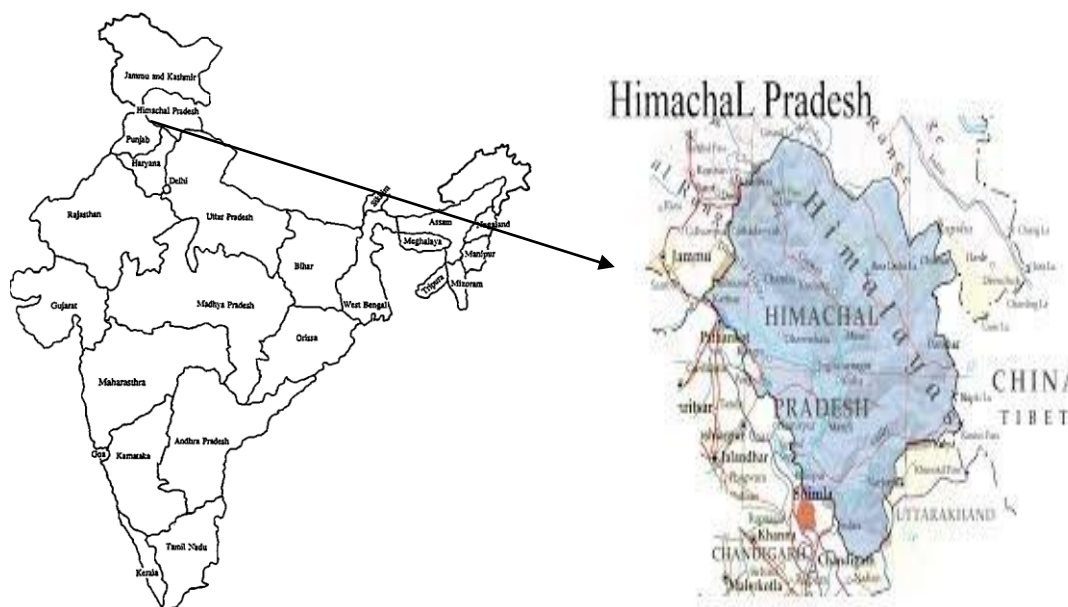


Fig. 1: Map of states of India showing Himachal Pradesh.

1. *Prunus cerasoides*

Family: Rosaceae.

Common Name: Wild Himalayan cherry and Sour cherry (GRIN, 2014).

Plant description: *Prunus cerasoides* is a tree which grows up to 30 metres (98ft) in height. It has glossy, ringed bark. The tree flowers in autumn and winter. Flowers are

hermaphroditic and are pinkish white in color. It has ovoid yellow fruit that turns red as it ripens. *Prunus cerasoides* is cultivated as an ornamental tree. The tree thrives in well-drained and moisture-retentive loamy soil, in an open, sunny, and sheltered location.

Traditional Uses

- i) Its fruit and seeds can be eaten raw or cooked.
- ii) Gum is chewed and obtained from the trunk. It can be employed as a substitute for gum tragacanth.
- iii) The fruits and the leaves give a dark green dye. Seeds can be used in the manufacture of necklaces.

2. *Hypericum oblongifolium*

Family: Hypericaceae.

Common name: Pendant St Johns Wort.

Description: The genus has a nearly worldwide distribution, missing only from tropical low lands, deserts and Polar Regions. All members of the genus may be referred to as *St. John's wort*, and some are known as *tutsan*.^[27]

Traditional uses

- i) Folk usages included oily extract ("St. John's oil").
- ii) Two main compounds of interest have been studied in more detail: hyperforin and hypericin. As psychiatric medication, it is usually taken as pills, or as tea. Standardised preparations are available.
- iii) Hypericum extract, by inducing both the CYP3A4 and the P-glycoprotein (P-gp), can reduce the plasma concentrations of different antineoplastic agents such as imatinib, irinotecan and docetaxel, thus reducing the clinical efficacy of these drugs.

3. *Cyclobalanopsis glauca*

Family: Fagaceae.

Common Name: Ring-cupped oak, Japanese blue oak or glaucous-leaf oak.

Plant description: a small to medium-sized evergreen broadleaf tree growing to 15–20m tall. The leaves are a distinct deep purple-crimson on new growth, soon turning glossy green above, glaucous blue-green below, 6–13cm long and 2–5cm broad, with a serrated margin. The flowers are catkins, and the fruit are acorns 1–1.6cm long, with series of concentric rings on the outside of the acorn cup.

Traditional uses

- i) Galls of trees are strongly astringent and can be used for the treatment of haemorrhages, chronic diarrhea, dysentery etc.
- ii) Galls are sometimes produced in great numbers on the tree and are caused by the activity of larvae of different insects. The insects live inside these galls, obtaining their nutrient therein. When the insect pupates and leaves, the gall can be used as a rich source of tannin, which can also be used as a dyestuff (<http://www.naturalmedicinalherbs.net/herbs/q/quercus-glauca.php>).

4. *Alangium chinense*

Family: Cornaceae.

Common name: *Chinese alangium*, Begonia leaf Alangium.

Plant description: It is a species of flowering plant. Lovely green leaves with short pointed lobes adorn the zig-zagged branches of *Chinese alangium*. Blooming in early summer and again in mid-autumn, the small oval fruits turn dark blue in autumn, too. A large shrub to small tree that is evergreen in frost-free climates but deciduous elsewhere, it is native to a large expanse of southern Asia's Himalayas eastward into the highlands of southeast Asia.

Traditional uses: In Hunan herbal medicine it is used for snake bites, circulation, contraception, hemostasis, numbness, poison, rheumatism and wounds.

5. Pergola plant

Family: Rosaceae.

Plant description: Plants and vines for pergola structures vary in size, growing habit and appearance. Many pergola plants are flowering vines that add color and interest to the landscape (<http://www.gardeningknowhow.com/special/spaces/ pergola-climbing-plants.htm>).

Traditional uses

- i) Fruits are used for treatment of ascariasis and oxyuriasis in children and treatment of infantile malnutrition due to intestinal parasitosis.
- ii) Decoction of fruit is used as gargle for toothache.

6. *Populus alba*

Family: Siliaceae.

Common name: Silver poplar.

Plant Description: It is a species of poplar, most closely related to the aspens (*Populus* sect. *Populus*). It grows in moist sites, often by watersides, in regions with hot summers and cold to mild winters.

Traditional Uses

- i) The stem bark is anodyne, anti-inflammatory, antiseptic, astringent, diuretic and tonic.
- ii) The bark contains salicylates, from which the proprietary medicine aspirin is derived. It is used internally in the treatment of rheumatism, arthritis, gout, lower back pains, urinary complaints, digestive and liver disorders, debility, anorexia, also to reduce fevers and relieve the pain of menstrual cramps.
- iii) Externally, the bark is used to treat chilblains, haemorrhoids, infected wounds and sprains. The bark is harvested from side branches or coppiced trees and dried for later use.
- iv) The leaves are used in the treatment of caries of teeth and bones. The twigs are depurative.

7. *Prunus mira*

Family: Rosaceae.

Common name: Smoothpit Peach.

Plant description: It is a deciduous tree growing to 10m (32ft 10in). It is hardy to zone (UK) 5. It is in flower from Mar to April, and the seeds ripen from Aug to September. The flowers are hermaphrodite (have both male and female organs) and are pollinated by Insects. Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils. It can grow in semi-shade (light woodland) or no shade. It prefers moist soil.

Traditional uses

- i) A green dye can be obtained from the leaves and fruit.
- ii) All members of the genus contain amygdalin and prunasin, substances which break down in water to form hydrocyanic acid (cyanide or prussic acid). In small amounts this exceedingly poisonous compound stimulates respiration, improves digestion and gives a sense of well-being.

8. *Prunus armeniaca*

Family: Rosaceae.

Common name: Ansu apricot, Siberian apricot, Tibetan apricot.

Plant description: The native range is somewhat uncertain due to its extensive prehistoric cultivation, though almost certainly somewhere in Asia. It is extensively cultivated in many countries and has escaped into the wild in many places.

Traditional uses: Seeds or kernels of the apricot grown in central Asia and around the Mediterranean are so sweet, they may be substituted for almonds. The Italian liqueur amaretto and amaretti biscotti are flavoured with extract of apricot kernels rather than almonds. Oil pressed from these cultivar kernels, and known as oil of almond, has been used as cooking oil. Kernels contain between 2.05% and 2.40% hydrogen cyanide, but normal consumption is insufficient to produce serious effects.

9. *Ougeinia dalbergioides*

Family: Leguminosae; Subfamily: Papilionoideae.

Common name: Sandan.

Plant description: It is a valuable timber and fodder species restricted to India. The natural forests containing this tree have been severely degraded by timber exploitation.

Traditional uses: *Ougeinia dalbergioides* yields a valuable timber. The wood air seasons slowly without much degradation. The wood does not require preservative treatment. It is difficult to work, but turns well and takes polish readily. Though originally considered difficult to peel, it is now frequently utilized for plywood (Krishna and Ramaswand 1932).

- i) Fodder. The leaves are highly valued as cattle feed. Leaves contain 12- 15% crude protein (Singh 1982).
- ii) The bark is used as a fish poison and to reduce fevers. A sap exudate is used to make a medicine to treat dysentery. The tree is a host plant for lac producing insects. The resulting shellac is of high quality.

10. *Fraxinus xanthoxyloides*

Family: Oleaceae.

Common Name: Ash.

Plant description: A rare ash tree native to dry valleys of the North West Himalayas, *Fraxinus xanthoxyloides* has fascinating, pale green leaflets and interlacing branches. A plant grown for its interesting foliage, this is particularly fetching when planted among a collection of equally unusual trees.

Traditional uses: Wood - close grained, hard. Used for making tool handles, it is also a good fuel. Bark is used to cure wound healing.

11. *Juglans regia*

Family: Juglandaceae

Common Name: Persian walnut, English walnut, Common walnut.

Plant description: It is an old World walnut tree species native to the region stretching from the Balkans eastward to the Himalayas and southwest China—notably at Arslanbob in Jalal-Abad Province. It is widely cultivated across Europe.

Traditional uses

1. Walnut heartwood is a heavy, hard, open-grained hardwood. Freshly cut live wood may be Dijon-mustard color, darkening to brown over a few days.
2. The dried lumber is a rich chocolate-brown to black, with cream to tan sapwood, and may feature unusual figures, such as "curly", "bee's wing", "bird's eye", and "rat tail", among others. It is prized by fine woodworkers for its durability, luster and chatoyance, and is used for high end flooring, guitars, furniture, veneers, knobs and handles as well as gunstocks.
3. Leaves have wound healing property.

12. *Acorus calamus*

Family: Acoraceae.

Common Name: Calamus, Sweet Flag, beewort, bitter pepper root, flag root, gladdon, myrtle flag, myrtle grass, myrtle root, myrtle sedge.

Plant description: The scented leaves and more strongly scented rhizomes have traditionally been used medicinally and to make fragrances and the dried and powdered rhizome has been used as a substitute for ginger, cinnamon and nutmeg.

Traditional uses

1. The leaves, stems, and roots are used in various Siddha and Ayurvedic medicines.
2. It is widely employed in modern herbal medicine for its sedative, laxative, diuretic and carminative properties.
3. It is used in Ayurveda to counter the side effects of all hallucinogens.
4. Sweet Flag, known as "Rat Root" is one of the most widely and frequently used herbal medicines amongst the Chipewyan people.

5. Hallucinations, possibly because of the presence of alpha-asarone or beta-asarone.
6. *Acorus calamus* shows neuroprotective effect against stroke and chemically induced neurodegeneration in rats. Specifically, it has protective effect against acrylamide-induced neurotoxicity.
7. Both roots and leaves of *A. calamus* have shown antioxidant, antimicrobial and insecticidal activities.
8. *Acorus calamus* may prove to be an effective control measure against cattle tick, *Rhipicephalus (Boophilus) microplus*.
9. A recent study showed that beta-asarone isolated from *Acorus calamus* oil inhibits adipogenesis in 3T3-L1 cells and thus reduces lipid accumulation in fat cells.

13. *Magnolia grandiflora*

Family: Magnoliaceae

Common Name: Southern magnolia, bull bay Southern, Large-flowered Magnolia, Southern Magnolia

Plant description: *Magnolia grandiflora* is a medium to large evergreen tree which may grow 120 ft (37 m) tall. It typically has a single stem (or trunk) and a pyramidal shape. The leaves are simple and broadly ovate, 12–20 cm (4.7–7.9 in) long and 6–12 cm (2.4–4.7 in) broad, with smooth margins. They are dark green, stiff and leathery, and often scurfy underneath with yellow-brown pubescence.

Traditional uses

- i) Flowers are also said to be used as a spice and a condiment.
- ii) The bark is diaphoretic, stimulant, tonic. It is used in the treatment of malaria and rheumatism. A decoction has been used as a wash and a bath for prickly heat itching. The decoction has also been used as a wash for sores and as a steam bath for treating dropsy. An alcoholic extract of the plant reduces the blood pressure, produces a slight acceleration in respiration but has no action on the heart.

14. *Piptanthus nepalensis*^[28]

Family: Fabaceae.

Common Name: Evergreen laburnum, Nepal laburnum.

Plant description: This Himalayan shrub is evergreen in mild sheltered sites, semi-evergreen elsewhere, losing its leaves in hard frost but soon recovering again in spring. The growth is upright and flexible, allowing plants to be trained on warm walls where they are sheltered and

flower more profusely. The blooms are large and bright yellow, like those of laburnum but in short upright clusters. Although good drainage is important, make sure plants are watered in summer to prevent sudden die-back.

Traditional uses

- i) Green pods chewed raw; ripe seeds cooked as vegetables and extract used as galactagogue.
- ii) Leaf juice dropped in puffed ear.

15. *Heracleum maximum*

Family: Apiaceae.

Common Name: Cow parsnip, Indian celery, Indian rhubarb or pushki.

Plant description: Cow parsnip is a tall herb, reaching to heights of over 2 metres (7ft). The genus name *Heracleum* (from "Hercules") refers to the very large size of all parts of these plants. Cow Parsnip has the characteristic flower umbels of the carrot family (Apiaceae), about 20 centimetres (8 in) across, these may be flat-topped or rounded, and are always white. Sometimes the outer flowers of the umbel are much larger than the inner ones.^[29]

Traditional uses

- i) Used to make poultices to be applied to bruises or sores.
- ii) Young stalks and leaf stems were used for food, where the outer skin was peeled off giving a sweet flavor. The dried stems were used as drinking straws for the old or infirm, and to make flutes for children.
- iii) A yellow dye can be made from the roots, and an infusion of the flowers can be rubbed on the body to repel flies and mosquitoes.

This report enlist 15 plant species found in Summer Hill, Shimla These plants have been reported to be used by local people to cure different disorders . The local people nowadays frequently use these plants along with other medicinal flora found in summer hill.

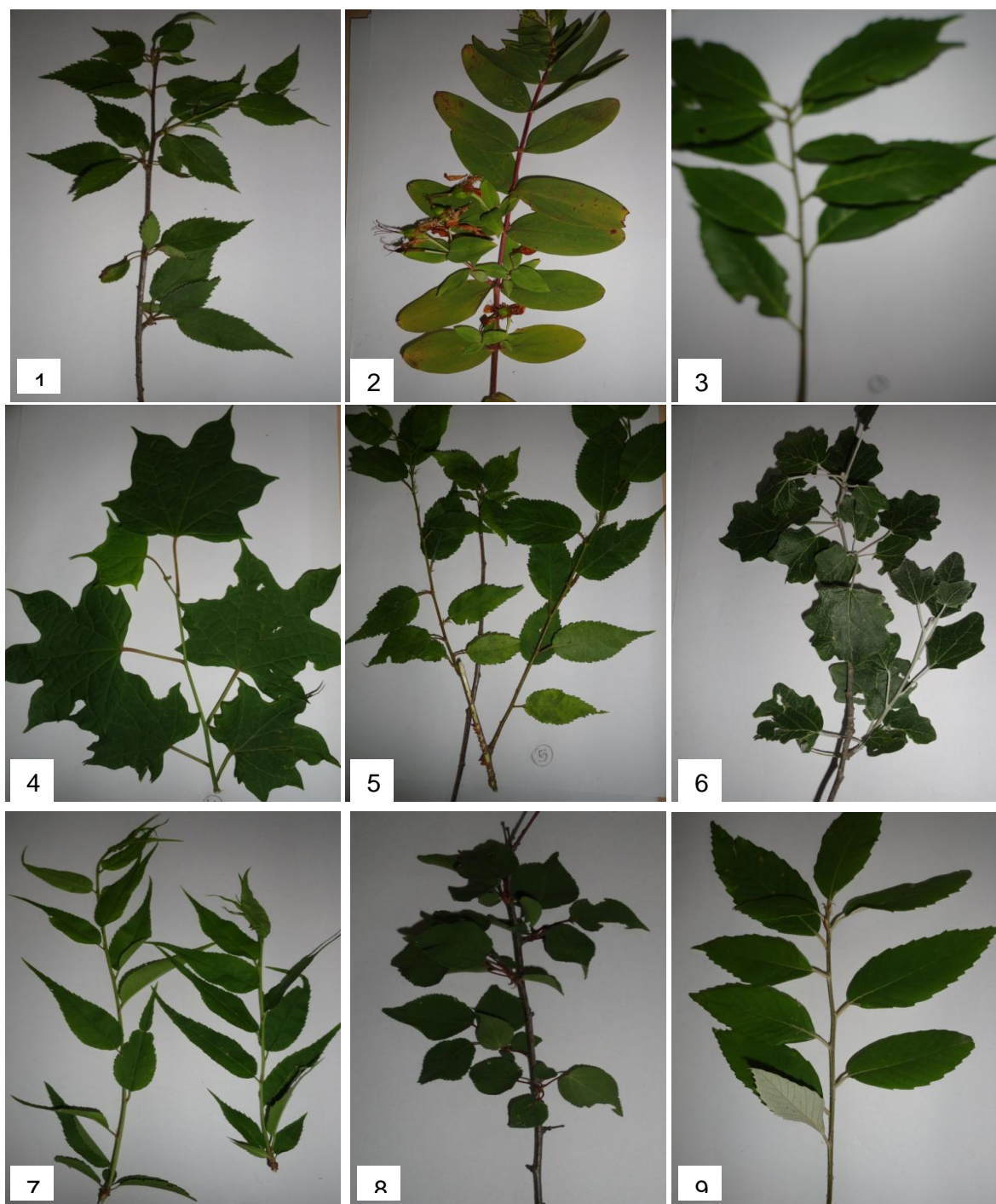


Fig. 2: Photograph of medicinal plants: 1. *Prunus cerasoides*, 2. *Hypericum oblongifolium*, 3. *Cyclobalanopsis glauca*, 4. *Alangium chinense*, 5. Pergola plant, 6. *Populus alba*, 7. *Prunus mira*, 8. *Prunus armeniaca*, 9. *Ougeinia dalbergioides*.

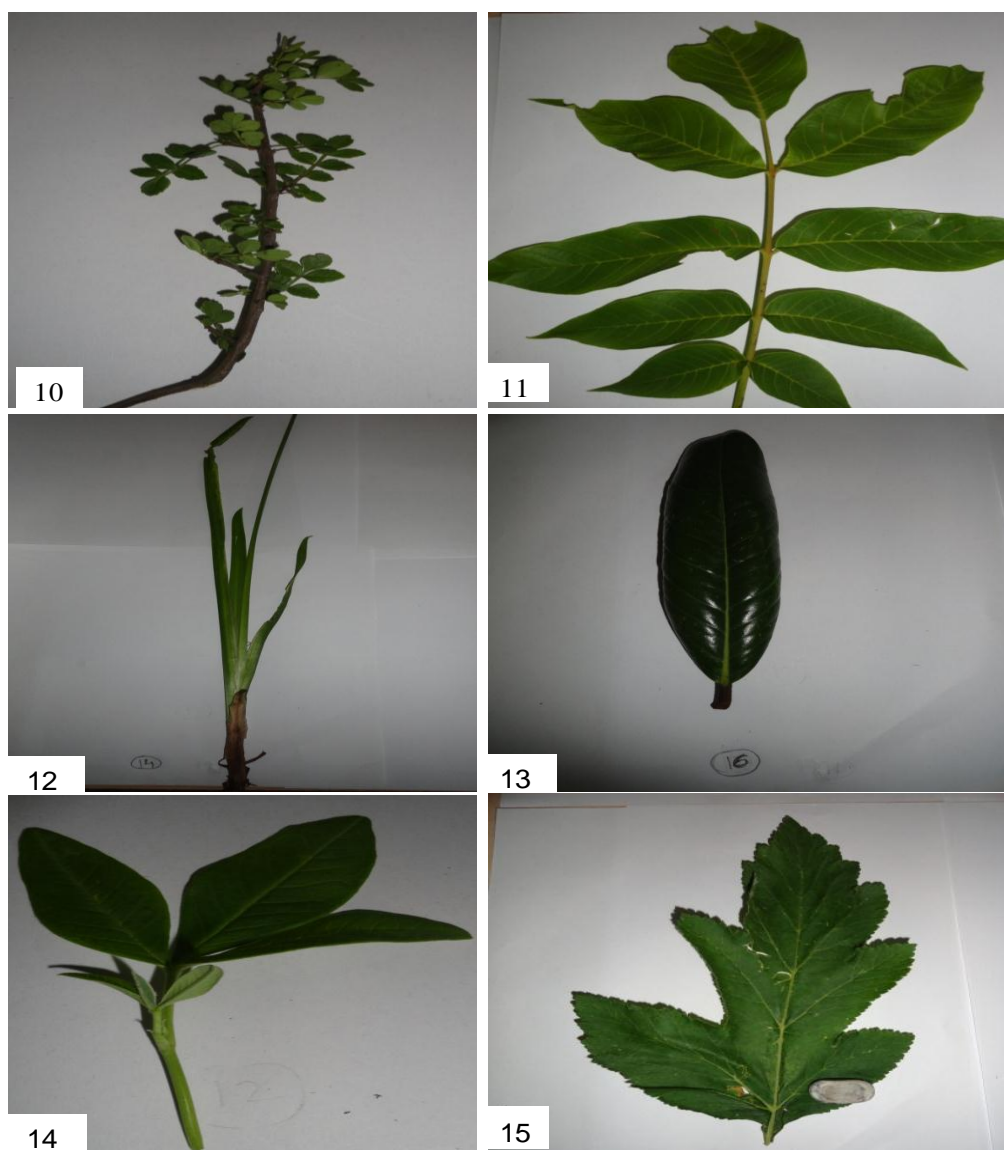


Fig. 3: Photograph of medicinal plants: 10. *Fraxinus xanthoxyloides*, 11. *Juglans regia*, 12. *Acorus*, 13. *Magnolia grandiflora*, 14. *Piptanthus nepalensis*, 15. *Heracleum maximum*.

CONCLUSION

In alternative medicine, medicinal plant preparations have found widespread use particularly in the case of diseases not amenable to treatment by modern methods. According to World Health Organization (W.H.O.), 80% of world population still relies on plant based medicines due. Modern allopathic medicines are not preferred to be used due to many side effects and large number of other dropouts. New generation may be sensitized and motivated to use natural products. Further research may be promoted and carried out on medicinal plants for their welfare of humanity.

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