SOME RARE AND IMPERFECTLY KNOWN MEDICINAL PLANT SPECIES OF UTTARANCHAL

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Introduction

The history of plant use for human or veterinary health is as old as human civilization, and the recognition or rejection of a species as fit for application evolved over time into a fine skill that was handed over to coming generations. Medicinal plants have traditionally been traded in Asian countries in large volumes for ages, and though not dispensed adequately with the knowledge of Systematic Botany, the traders and users were well acquainted with the Trade or Ayurvedic nomenclature of the herbal products, that had been developed so precisely at times, as even to reveal their provenance. Medicinal plants have traditionally been traded in Asian countries in large volumes for ages, and though not dispensed adequately with the knowledge of Systematic Botany, the traders and users were well acquainted with the Trade or Ayurvedic nomenclature of the herbal products, that had been developed so precisely at times, as even to reveal their provenance.

The high value of some herbal products and the impatience of the general populace to use even substitutes of them, has led to their diminution and some serious misconceptions have arisen overtime. High market demand of some species of medicinal and aromatic plants has led to a severe decline in their natural populations and rendered several important ones to the brink of extinction. The true identity and nomenclature of these species is commonly misunderstood, and it is common to find them misrepresented frequently, even by trained persons.

Over time, with the gradual (and recently, much more rapid) decline in the natural resource and the simultaneous spurt of the economy, the real herbal products were replaced by comparatively easily available substitutes that took on the trade names of the original species. Unfortunately, in some instances we have based botanical identification on the prevailing market names and hence the confusion.

Some species that are very rare in Uttaranchal and some that are erroneously represented have been chosen for discussion in this paper for the purpose of introducing the subject.

Enumeration and Discussion

Akarkara

Prized internationally as a remedy of toothache and male debility, Akarkara is one of the most commonly misquoted species of the herbal world. The Akarkara that is being traded in India today is in fact *Spilanthes acmella*, which is a cheap substitute of the true drug. It was

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purchased in large quantities by prestigious toothpaste companies some time ago, with a resulting rush by growers to produce still larger quantities of *Spilanthes acmella*. In the process many farmers were left with large quantities of *Spilanthes* that had no takers.

The true Akarkara, *Anacyclas pyrethrum*, does not grow in this country and is native to the North Africa, especially Algeria. It is a high value herb and was introduced as far back as 1950 by the Forest Research Institute (FRI) in Dehra Dun but the effort to cultivate it was not pursued further.

Anacyclas pyrethrum is a scandent perennial herb with fleshy, lyrate, highly dissected leaves and white flowers. The petals are white above and have distinctly dark pink undersides, a feature that is diagnostic for the species.

Small populations of *Anacyclas* have been raised by Uttaranchal Forest Department at Kaddukhal and Chamba in Tehri district and Songad near Harshil in Utarkashi district. All are flowering and have shown perennial habit. Non-Wood Forest Production Division of the Forest Research Institute, Dehra Dun has reported *Anacyclas* as showing annual habit in Dehra Dun vide their report dated 6th April, 1951.

True Akarkara, in view of the good value it fetches in the market, has promising potential for the farmer of Uttaranchal in areas lying above 1,500m and has the capacity to thrive even on poor rocky soils. At Kaddukhal (2,400 m) it exhibited a peculiar character by not showing any signs of withering or drying at all even under heavy snow for about 3 months, the leaves remaining fresh green throughout.

Chirayta

Most of us can recollect the bitter taste of Chirayta as it has been a common everyday remedy against fever, intestinal worms and liver ailments in Indian households. The whole plant or 'Panchang' has been used as a refrigerant, thermogenic, anti-inflammatory, anti-pyretic, sudorific and anti-periodic in ayurvedic medicine.

The genus *Swertia* was named by Linnaeus after Emanuel Swert, a Dutch botanist of the 17th century. *Swertia chirata* has been harvested almost to the brink of extinction and very few, and highly restricted, populations exist today as the plant has been mercilessly removed from the wild. Exhaustive surveys have revealed some populations of upto 250 individuals at Kaddukhal near Mussoorie that are now protected. One almost pure patch of *Swertia chirata* of about half a hectare has been found at Masar Tal in Tehri district.

In the absence of the true herb, what is coming to the market as Chirayta is in fact the other species of this genus, viz, *Swertia angustifolia, Swertia ciliata* and *Swertia cordata*. Lately, with the dicrease in these other species of *Swertia* too, Kalmegh or *Andrographis paniculata* is being traded as 'Chirayta'. Innocent users, and the scientific world at large, are unaware of the decline of such an important natural resource. To add to the dilemma, the seed of Chirayta is very small and has not shown specific results in germination trials conducted at the FRI Seed Testing Lab. by Forest Department.

Plate 1

Flowering of *Anacyclas pyrethrum*
at Kaddukhal, 20th April 2004

Plate 2

Spilanthes acmella

Plate 3

Swertia ciliata

Plate 4

Natural *Swertia chirata*
at Kaddukhal

Plate 5

Swertia cordata

Plate 6

Germinants of *Nardostachys jatamansi*

Plate 7

Arctium lappa

Plate 8

Saussurea costus

Plate 9

Gentiana kurroo flowering near Surkanda Devi in Tehri

Chirayta appears to have remained quite a puzzle for systematic botanists for almost 60 years in the nineteenth century as it has been ascribed a wide variety of nomenclature starting from *Gentiana chirayita* Roxb. ex Fleming in 1812 to *Agathotes chirayta* D. Don in 1837 to *Ophelia chirata* (Wall.) Griseb. in 1845 and finally to *Swertia chirata* (Wall.) Clarke in 1883. The plant is annual or biennial, erect, robust, stems quadrangular, leaves oblong, spathulate, obtuse, 5-15 cm long, 2.5-4.0 cm broad, cauline, ovate-lanceolate, acuminate, sessile, amplexicaule, nerves 3-7, prominent on both sides. The flowers are yellowish green outside and purplish inside, tetramerous, 5-8mm across. Calyx is shorter than corolla, lobes linear, lanceolate, acute. Corolla lobes 4, ovate, acuminate, coriaceous, 2 submarginal pits at the base of each lobe, glands 2, covered by vertical hairy flaps, the hair extending up to half the length of the corolla lobes.

It prefers comparatively moist, shady extremely well drained slopes under Ban and Moru forests at about 1,800 m to 2,400 m, and distinctly northern aspects.

Swertia alata and *S. nervosa* also have tetramerous flowers but the glands are solitary, covered by scales and not hairs and the latter has petiolate leaves. Due to the close resemblance of features the species under *Swertia* are difficult to differentiate.

The Forest Department is in the process of establishing a small 'Swertarium' at Kaddukhal where the different species of *Swertia* will be planted in an organised manner for the benefit of the serious scholar of systematic botany. It is proposed to set up a collection of all the species of the genus *Swertia* found in Uttaranchal at one place along with specimens of *Swertia chirata* from different provenances of Uttaranchal as well as out of the state. Some seed and plants of the species from Tandong and Rateychu forest blocks of Sikkim will also be tried here as well as some from Nepal. The germplasm from Sikkim has been procured in August 2002.

Swertia chirata is a highly threatened species and is one of the choicest candidates for a concerted 'Species Recovery Programme' both in terms of its conservation value and also in view of the value it fetches in the market. Though a successful protocol has been evolved for tissue culture of this species, the rehabilitation of such plants in the field has been done with limited success and may have to depend on plants grown from seed for some time. The flourishing cultivation of this species alone is capable of generating vast revenue for the state and no stones should be left unturned for evolving an easy farming protocol.

Kuth

Saussurea costus syn. *S. lappa* is the true Kuth of trade but has been repeatedly mistaken by a very similar plant *Arctium lappa* or Burdock that has no comparable value. *Arctium lappa* was widely planted mistakenly and the author has seen it being cultivated in several research nurseries in place of *Saussurea costus*.

The true Kuth, *Saussurea costus* is distinguished from *Arctium lappa* by its irregularly winged leaf stalk and dense rounded terminal cluster of purple flower heads. The leaves of *Arctium* do not have

winged leaf stalks and the flowers, though similar, are borne on long flower stalks.

Kuth seed can readily be distinguished form Burdock seed as the former is much heavier and has more body than the latter. Kuth germinates readily and the root takes about two and a half years to mature. *Saussurea lappa* is not native to Uttaranchal and is known to occur in natural populations in Jammu & Kashmir and the western part of Himachal Pradesh. Here it is found in cultivation or as escaped cultivation. Specimens are found in Chakrata, Khirsu in Pauri, and one specimen was found in Dibrugheta in Nanda Devi National Park in 2003 by a team of scientists. It is a valuable plant for cultivation and the roots are in high demand in the aromatic oil market

Salam Mishri

Many other herbal products are marketed by false names, the most notable being Salam Mishri. Prescribed as a tonic and considered a powerful aphrodisiac, Salam Mishri is one of the most expensive herbal products but in spite of the tremendous demand tubers of various species ranging from *Roscoea alpina* to *Satyrium nepalense* are traded in its name. The true Salam Mishri is considered to be the tubers of *Eulophia dabia* that is found at much lower altitudes and is extremely rare today. Herbarium specimens of *Eulophia dabia* have been collected from Dhikala Chaur and Sarpaduli in Corbett National Park and from the Mohand Shivaliks in the past but the presence today is very scarce.

Gentiana kurroo

Till late a subject of heated debate whether it is at all native to Uttaranchal or not, *Gentiana kurroo* is another story of the reckless destruction of an extremely important species by mankind.

Collections have been made as early as 1896 near Mussoorie and the species has recently been relocated on way to Konain, Chakrata and near Surkanda Devi in Tehri. Known as Karvi in trade, it was exploited as late as 1964 from these areas and exhaustive surveys near Surkanda have revealed a population of just 220 plants at one location. The survey is still continuing and it is clear that this rare species is precariously threatened.

Once the flowering plants were located at the above site in the end of October 2003, seeds were collected in January 2004 and sown in the mist chamber at Muni ki Reti on 16.03.04 in root trainers without any pre treatment other than cleaning and drying. Fortunately the seeds have germinated in profusion by 26.03 04.

Another strong candidate for a gigantic Species Recovery Programme.

Jatamansi

Nardostachys jatamansi or the Indian Nard has been a source of the invaluable Spikenard Oil. The highly aromatic rhizome is bitter, astringent, sweet, acrid, cooling, emollient, antiseptic, anodyne, digestive, carminative, laxative, stomachic, stimulant, deodorant, vermifuge, expectorant, aphrodisaic, somniferous, sudorific, antipyretic and nervine tonic.

The spikenard oil is considered the best remedy for graying hair and is also an important base for high grade perfumery.

Jatamansi is being raised from seed in Bhuna/Sitol Nursery of Garhwal and the Forest Department has been able to develop 45000 plants till now.

Jatamansi is also the most victimized species that was earlier found in vast mats spreading over the ground in alpine areas, but is now to be found as singular tufts, if at all. However, it is freely available in the market, as any root stock having hairy processes after a dip in any cheap perfume is readily purchased by the gullible buyer.

SUMMARY

Valuable species have been removed for so long and so intensively from the wild that they have come to the brink of extinction. The market forces, however have been so strong that substitutes have emerged to satisfy the demand, and over time the substitute has assumed the importance of the original drug. The present paper deals with correct identity of Akarkara (*Anacyclas pyrethrum*), Chirayta (*Swertia chirata*), Kuth (*Saussurea costus*), Salam Mishri (*Eulophia dabia*). *Gentiana kurroo* has been rediscovered after a lapse of 50 years. It is time now to educate ourselves and to adopt the latest benefits of modern science to retrieve the true herbs species from final annihilation. Serious Species Recovery Programmes need to be initiated for the highly threatened plants.

उत्तरांचल की कतिपय दुर्लभ और अपूर्णतया ज्ञात औषध – पादप जातियां

एस॰ चन्दोला

सारांश

बहुमूल्य पादपजातियां जंगलों से इतने अधिक समय से और इतनी अधिक मात्रा में निकाली जाती चली आ रही हैं कि वे अब विलुप्ति होने के कगार तक आ पहुंची हैं । बाज़ार की शक्तियां, किन्तु, इतनी अधिक शक्तिशाली हैं कि उनकी मांग पूरी करने के लिए उनकी स्थानापन्न जातियां तक बाज़ार में आ पहुंची है । प्रस्तुत अभिपत्र अकरकरा (*एनासाइक्लास पायरेश्रम*) चिरायता (*स्वेर्टिया चिराटा*), कुथ (*सास्सूरिया कोस्टस*) सालम मिश्री (*योलोफिया डाबिया*) का सही - सही परिज्ञान कराने से सबंधित है । जेंटियाना कर्रू तो 50 वर्ष बीत चुकने पर फिर से खोजा गया है । अब हमारे शिक्षित बनने का समय आ गया है और अपनी वास्तविक जड़ी - बूटी जातियों का सर्वथा विनष्ट हो जाने से बचाने के लिए आधुनिक विज्ञान के नवीनतम तौरतरीकों को उपनाना ही चाहिए । गम्भीर जातियों के पुनप्राप्ति कार्यक्रमों को अत्याधिक खतरे में आए हुए पादपों के लिए शुरू कराने की आवश्यकता है ।