Introduction

Khandesh is the northern part of Maharashtra State of India. Forest areas of Khandesh includes Satpura Mountain ranges and some offshoots of Western Ghat (Sahyadris)-one of the major hotspots of biodiversity in world. Herbal medicine, also known as herbalism or botanical medicine, is a medical system based on the use of plants or plant extracts that may be eaten or applied to the skin. Since ancient times, herbal medicine has been used by many different cultures throughout the world to treat illness and to assist bodily functions. Herbal medicines are one type of dietary supplement. They are sold as tablets, capsules, powders, teas, extracts, and fresh or dried plants. People use herbal medicines to try to maintain or improve their health. Many people believe that products labeled “natural” are always safe and good for them.

The use of plants as medicines predates written human history. Archaeological evidence indicates that humans were using medicinal plants during the Paleolithic, approximately 60,000 years ago. The ability to synthesize a wide variety of chemical compounds that are used to perform important biological functions, and to defend against attack from predators such as insects, fungi and herbivorous mammals is called herbal medicine. Many of these phytochemicals have beneficial effects on long-term health when consumed by humans, and can be used to effectively treat human diseases. At least 12,000 such compounds have been isolated so far; a number estimated to be less than 10% of the total [1-5].

One of the oldest herbs in history is the popular Ginkgo biloba. Fossil records show that Ginkgo has been on earth at least since the Paleozoic period. Egyptians wrote one of the earliest known recorded medical documents around the 1500 BC called Papyrus Ebers. This 20-meter long scroll documents 700 plant-based remedies. A medicinal plant is a plant that has similar properties as conventional pharmaceutical drugs. Humans have used them throughout history to either cure or lessen symptoms from an illness. A pharmaceutical drug is a drug that is produced in a laboratory to cure or help an illness.

Medicinal herbs are plants that are used for medicinal purposes. Other types of herbs include culinary herbs, used to flavor food, and aromatic herbs, used to add fragrance. Medicinal herbs cover a wide range of types of plants. They can be annuals or perennials; woody or herbaceous; sun loving or shade requiring. It is likely that humans have used plants as medicine for as long as we have existed. Archeological excavations dated as early as 60,000 years ago have found remains of medicinal plants, such as opium poppies, ephedra, and cannabis. Medicinal plants are
considered as a rich resource of ingredients which can be used in drug development either pharmacopeial, non-pharmacopeial or synthetic drugs. Some plants and their derivatives are considered as important source for active ingredients which are used in aspirin and toothpaste. Traditional medicine is the sum of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness.

A discussion of human life on this planet would not be complete without having look at the role of plants. Many of today's drugs have been derived from plant sources Indigenous people derived medicines from thousands of plants. Plants are well known as a major source of modern medicine. From ancient time, humans have utilized plants for the treatment or prevention of diseases, leading to the dawn of traditional medicine. In recent years there has been reawakened scientific interest in the fundamental role of plants including medicinal purposes [6-10].

Tribal people live close to nature and have accentuated unique knowledge about plant utilization for different purposes through the course of their centuries old experience. Therefore ethnobotanical studies of different tribal localities may lead to find new information on unexploited natural resources and new users of existing resources as sources of medicine, food, dyes, agricultural etc. but at some places recent changes in tribal attitudes due to habitat displacement, deforestation, modernization etc. have led to decline and even disappearance to this rich knowledge system, therefore it is essential to gather their entire knowledge on plant use before losing it forever.

Taxonomy identifies and enumerates the components of biological diversity providing basic knowledge underpinning management and implementation of the Convention on Biological Diversity. Ex situ collections are sources of plant material for recovery of threatened or endangered species, habitat rehabilitation and restoration, crop improvement, new product development, and a wide variety of research studies. Conservation of medicinal, endemic and endangered plants can be accomplished by the ex-situ i.e. outside natural habitat by cultivating and maintaining plants in botanic gardens, parks, other suitable sites. Conservation efforts are often focused on a single species. This is usually for the reasons that: some species are key to the functioning of a habitat and their loss would lead to greater than average change in other species populations or ecosystem processes. These are known as keystone species [11-17].

Some of the plants that have become extinct in the wild can still be found in botanic gardens. There is no doubt that ex situ conservation of wild plants in botanic gardens and in situ conservation in nature reserves are of complimentary importance. About 5000 or even more species of flowering plants are endemic to India and these are distributed among 141 genera belonging to 47 families. These species are conserved in the floristically rich areas of North-East India, the Western Ghats, north-west Himalayas and the Andaman and Nicobar Islands. These areas constitute two of the 18 hot spots identified in the world.

The world’s roughly 16200 botanic gardens today contain at least 38000 plant species. The Royal Botanic Gardens of England (Kew England) along contains an estimated 27000 species of plants (10 percent of the world's flora) and International Union for Conservation of Nature and Natural Resources (IUCN) considers some 2800 of these species are rare, threatened or endangered. Botanical gardens play a very important role in education, research, even recreation and ex-situ conservation especially those facing imminent threat of extinction. Several gardens in the world are specialized in cultivation and study of medicinal plants, while some contain a special medicinal plant garden or harbor special collection of medicinal plants.

I have developed a botanical garden and given emphasis on rare or endangered plants, wild flowers and important economic plants of the regions of Khandesh. Each year more than 5-7 field tours were arranged to investigate and collect wild and medicinal plants.

Methodology

Frequent field tours were arranged to collect saplings, seeds and rhizomes of highly medicinally plants. Seeds and saplings are cared in nursery for germination and post care. Collected specimens are identified with the help of floras and literature cited in references at the end. Herbarium specimens are prepared for authentication of collected material and housed in the Herbarium of the Department. Following plant species, I could conserve in my botanical garden during last two years in the program by saplings and seeds collected from the forests. I also brought saplings of medicinal plants from nurseries for conservation and education to students. In the following systematic enumeration plant species are arranged alphabetically with their botanical names, followed by family in parentheses. Vernacular names are appended at the ends of botanical names in inverted commas, then it is followed by taxonomy, Occurrence, threats, precise locations, flowering and fruiting period, status and traditional uses.

Systematic Enumeration

*Abrus precatorius* L. (Fabaceae) “Gunj”.

- **Occurrence:** Found in forests along bushes, small trees.
- **Threats:** Overexploitation for leaves and open grazing
- **Precise locations:** Pal, Manudevi
- **Flowers & Fruits:** More or less throughout the year.
- **Status:** Conserved in botanical garden
- **Traditional Uses:** Leaves are medicinal in stomatitis, mouth ulcer.
**Amorphophallus bulbifer** (Roxb.) Bl. (Araceae) "Suran"

- **Taxonomy:** Tall herbs with big, solid, rounded corms. Flowers white. Fruits globose in terminal. Seeds red on maturity.
- **Occurrence:** Found in shady places, on low hill slopes.
- **Threats:** Open grazing
- **Precise locations:** Mulher, Salher, Kelzer.
- **Flowers & Fruits:** July – October.
- **Status:** Well in botanical garden
- **Traditional Uses:** Corms are used as vegetables. Medicinal in piles.

**Asparagus racemosus** Willd. (Liliaceae) "Shatavari"

- **Taxonomy:** Scandent, spinous, undershrub with fasciculated tuberous roots. Leaves reduced. Cladodes in whorls. Flowers small, white.
- **Occurrence:** Found in open forest, dry areas of the forests.
- **Threats:** Habitat loss as wood cutting for fuel
- **Precise locations:** Pal, Mulher, Manudevi
- **Flowers & Fruits:** July-October.
- **Status:** Well grown around garden wall
- **Traditional Uses:** Famous 'shatavari churna' is prepared out of roots and is useful to increase breast milk. Also medicinal in kidney troubles. Young roots also eaten raw to increase sperm count.

**Bauhinia tomentosa** L. (Caesalpiniaceae) “Piwala Kanchan”.

- **Taxonomy:** A tall tree with dark yellow, large flowers with brown blotch at the centre.
- **Occurrence:** Found in hilly forest on hilly slopes.
- **Threats:** Pollination barriers
- **Precise locations:** Only Patnadevi forest
- **Flowers & Fruits:** September-October.
- **Status:** Endangered in Khandesh. By seed germination I have prepared many saplings. Well growing in botanical garden.
- **Traditional Uses:** Dye obtained from flowers.
- **Ecology:** This species is ecologically very important because the flowers from this tree, rich in pollen and nectar attract various insects such as butterflies and bees. In turn, these insects will attract insect eating birds. Certain birds and the larvae of certain moth species feed on the flowers. This is also a host plant for many butterfly’s species, with the larvae feeding on the leaves.

**Caralluma adscendens** (Roxb.) R. Br.var. *fimbriata* (Wall.) Grav. & Mayur (Asclepiadaceae) "Makadsingi"

- **Taxonomy:** A succulent herb with beautiful, dark-red, chocolate colored flowers.
- **Occurrence:** Occur on stony and sandy low hilly slopes.
- **Threats:** Overexploitation
- **Precise locations:** Laling, Pal
- **Flowers & Fruits:** More or less throughout the year.
- **Status:** Well flourished in botanical garden in bed.
- **Traditional Uses:** This is very good medicine for mental balance, eaten raw also, good vegetable too.
- **Ecology:** This species was occasional in rocky boulders in association with *Euphorbia antiquorum* but because of very rapid exploitation by tribals, this is going to be endangered from the area of Khandesh.

**Ceropegia sahyadrica** Ansari et Kulkarni (Asclepiadaceae)

- **Taxonomy:** A small herbs. Leaves cordate. Flowers white with inflated tube at apex.
- **Occurrence:** Found on very high hilly forests areas among grasses, in dense shady places.
- **Threats:** Open grazing and habitat loss
- **Precise locations:** Salher
- **Flowers & Fruits:** July-October.
- **Status:** Endemic and Endangered. Conserved in pot in our botanical garden as ex-situ conservation.
- **Traditional Uses:** Edible tubers with medicinal value.

**Ceropegia hirsuta** Wight & Arn. (Asclepiadaceae) “Khutti”.

- **Taxonomy:** A climbing herbs. Leaves oblong, broadly lanceolate, hirsute hairy. Flowers tubular, purple with inflated tube at the apex.
- **Occurrence:** Found on *Euphorbia antiquorum* on low hilly slopes.
- **Threats:** Open grazing and habitat loss
- **Precise locations:** Salher
- **Flowers & Fruits:** July-October.
- **Status:** Rare. Conserved in botanical garden
- **Traditional Uses:** Bulbs are eaten by tribals as vegetables. Uses the plant as a remedy for stomach psets.

**Cissus quadrangularis** L. (Vitaceae) “Hadsankal”.

- **Taxonomy:** A creeping and trailing herbs. Stem quadrangular. Leaves orbicular, glabrous, Flowers green.

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Citation: Kharsirsar SR. Taxonomy and Occurrence of Some Medicinal Plants Used in Traditional Medicines Arch Phar & Pharmacol Res. 1(3): 2018. APRR.MS.ID.000513. DOI: 10.33552/APPR.2018.01.000513.
• **Occurrence:** Found in moist hilly forest along trees, shrubs. Brought from nursery.

• **Threats:** Habitat loss

• **Precise locations:** Trimbakeshwar

• **Flowers & Fruits:** September-December.

• **Status:** Rare. Well growing along garden wall compound.

• **Traditional Uses:** Stem juice is medicinal and applied externally in spondylosis, arthritis, rheumatism and joint pains. Juice can be taken internally in spondylosis.

**Commiphora wightii** (Arn.) Bhandari (*Burseraceae*) “Gugal”, “Gugal Gum”

• **Taxonomy:** A small shrubby plant with corky bark. Stem growth is very slow. From old stem a yellow sticky juice is obtained. Flowers creamy yellow.

• **Occurrence:** Found in dry forest, desert areas.

• **Threats:** Habitat loss and open grazing.

• **Precise locations:** Naturally occur in Jaipur wild life sanctuary. Collected for conservation.

• **Flowers & Fruits:** February-June.

• **Status:** Endangered. Good and well in botanical garden, now in pots and will transfer to beds.

• **Traditional Uses:** Gum obtained from the mature stem is reputed medicine in arthritis. Gum is also useful in religious ceremonies.

**Costus speciosus** (Koen.) J. M. Sm. (*Zingiberaceae*) “Bisht”, “Pushkara”, “Keukand”, “Kashmeera”, “Kust”

• **Taxonomy:** A large undershrub. Stem glabrous. Leaves spiral, oblong-lanceolate. Flowers white, in terminal, compact spike. Capsules obtusely trigonous, deep-red.

• **Occurrence:** Found on high hilly areas of the forest along water courses, bushes etc.

• **Threats:** Habitat loss

• **Precise locations:** Manudevi, Anjaneri

• **Flowers & Fruits:** August-November.

• **Status:** Endangered. Well in botanical garden

• **Traditional Uses:** Rhizomes used in skin diseases, asthma, bronchitis, fever and constipation. Traditionally rhizome of the plant is used as anti-inflammatory and antipyretic properties.

**Curcuma inodora** Blatt. (*Zingiberaceae*) “Jangali Haldi”

• **Taxonomy:** A small herb. Leaves broadly lanceolate. Flowers in spikes, white-yellow with pinkish shade.

• **Occurrence:** Found in shady, grassy forest areas.

• **Threats:** Habitat loss

• **Precise locations:** Manudevi, Patnadevi, Mulher

• **Flowers & Fruits:** August-October.

• **Status:** Endemic. Well in garden in pots.

• **Traditional Uses:** Scentless turmeric is cultivated as an ornamental and also used in traditional medicines.

**Datura ferox** L (*Solanaceae*) “Jalgali Dhotara”

• **Taxonomy:** A small herbs. Leaves oblong with undulate margin. Flowers whitish-creamy. Fruits with soft laciniate scales when young.

• **Occurrence:** Found in post harvested fields.

• **Threats:** Habitat loss

• **Precise locations:** Sinnar, Palkhed

• **Flowers & Fruits:** May-July.

• **Status:** Endangered. Conserved in pot.

• **Traditional Uses:** Seeds are used in killing fish

**Dioscorea bellophylla** (Prain) Haines (*Dioscoreaceae*) “Jangali Kand”

• **Taxonomy:** A climbing herbs. Leaves glabrous, ovate, prominently nerved. Flowers creamy in spikes. Fruits winged. Seeds minute.

• **Occurrence:** Occurs on trees and bushes in dry, moist forest.

• **Threats:** Open grazing

• **Precise locations:** Patnadevi

• **Flowers & Fruits:** August-October.

• **Status:** Endangered. Well flourished along with poles of polyhouse in our botanical garden.
Traditional Uses: Tubers are eaten and medicinal in piles.

*Enicostemma axillare* (Lam.) Raynal (Gentianaceae) “Nai cha pala”
- **Taxonomy:** A small herbs forming pure stand in forest areas. Stem quadrangular. Leaves 3-nerved, linear-lanceolate. Flowers white.
- **Occurrence:** Found in grasses in open forest.
- **Threats:** Open grazing.
- **Precise locations:** Mulher
- **Flowers & Fruits:** June-September.
- **Status:** Occasional. Flourished in botanical garden at corners seasonally.
- **Traditional Uses:** Juice of the whole herb is useful in chronic fever.
- **Doses:** Whole herbs or only leaves crush with water and taken orally.

*Eulophia herbacea* Lindl. (Orchidaceae) “Dukkar kand”, “Kokad kand”
- **Occurrence:** Occurs in hilly forest along bushes, shady places.
- **Threats:** Habitat loss
- **Precise locations:** Songarh, Dangs, Haripura
- **Flowers & Fruits:** More or less throughout the year.
- **Status:** Endangered. Very well flourished in pots since three years in botanical garden.
- **Traditional Uses:** Paste of the rhizome is useful in pimples.

*Gloriosa superba* L (Liliaceae) “Khadyanag”, “Bachnag”
- **Taxonomy:** Climbing herbs. Rhizome white. Leaves with coiled apex. Flowers scarlet-red. Capsules ellipsoid.
- **Occurrence:** Found in nallas, gullies in dry deciduous forests.
- **Threats:** Open grazing and overexploitation.
- **Precise locations:** Patnadevi, Mulher
- **Flowers & Fruits:** June-October.
- **Status:** Rare. Growing in garden seasonally.
- **Traditional Uses:** Rhizome is used in extraction of an alkaloids i.e. colchicines. Plant is also largely exploited for beautiful flowers.

*Gmelina arborea* Roxb. (Verbenaceae) “Shivan”
- **Taxonomy:** A medium sized tree. Stem quadrangular. Leaves cordate to lobed. Flowers yellow.
- **Occurrence:** Found along forests roads.
- **Precise locations:** Manudevi, Salher
- **Flowers & Fruits:** February-June.
- **Status:** Rare. Well in botanical garden.
- **Traditional Uses:** Fruits used in “Dashmul” of Ayurveda. Cure vata, pitta and cough.
- **Doses:** Leaf juice applied on severe headache.

*Gymnema sylvestre* (Retz.) Schult. (Asclepiadaceae) “Gurmar”, “Madhunashini”
- **Taxonomy:** A climbing herb. Leaves obovate, acute at apex. Flowers are small bell-shaped, yellow.
- **Occurrence:** Occurs in moist, dry deciduous forest along bushes.
- **Precise locations:** Collected from nursery. Occasional in Panchmarhi
- **Flowers & Fruits:** August-October.
- **Status:** Rare. Planted along wall of botanical garden.
- **Traditional Uses:** Leaves are medicinal in curing diabetes.

*Hemidesmus indicus* R.Br. (Asclepiadaceae) “Anantmul”
- **Occurrence:** Found among shrubs and small trees in dry deciduous forest.
- **Threats:** Over exploitation
- **Precise locations:** Pal, Mulher, Amilibari
- **Flowers & Fruits:** December-March
- **Status:** Rare
- **Traditional Uses:** Useful in Burning sensation, skin disease and diarrhea. The stem powder is boiled and used on the inflammation uterine disorders, cough and asthma. Roots and stem is officinal part.

*Mickeila champaca* (Magnoliaceae) “Sonchapha”
- **Taxonomy:** A tall evergreen tree. Leaves broadly ovate-lanceolate. Flowers large, strongly scented, deep orange-yellow. Fruits an etaerio of achenes, green when young, black when mature, spotted with white.
Roots and root powder is useful in:

• Habitat loss

Leaf powder with milk is useful in:

• Asthma
• Eczema
• Psoriasis
• Obesity
• Diabetes

The anti-hyperlipidemic properties of Vijaysar tree helps in reducing total cholesterol, low-density lipoprotein and serum triglyceride levels in the body. The antioxidants and astringent properties of Vijaysar help to treat cuts, bruises and other skin problems.

**Control Blood Sugar Level in Diabetes**

Vijaysar is well-known remedy to take care of diabetes. Pterocarpus marsupium reduces blood sugar level, cholesterol and triglycerides. It also lowers the symptoms of diabetes such as frequent urination, over eating, regular thirsts, and burning pains in limbs. Vijaysar continues to be used for diabetics for thousands of years. In ancient time, people had a unique method of implementing Vijaysar tree for dealing with diabetics. They designed tumbler's from wood of Vijaysar tree. sufferers were made to consume by the tumbler. Vijaysar Tumbler is created from its hardwood.

**Radermachera xylocarpa (Roxb.) Roxb. ex K. Schum. (Bignoniaceae) “Tetu”**

- **Taxonomy:** A tall tree. Leaves broadly compound. Flowers white. Fruits very long ca 95-100 cm. Seeds winged.
- **Occurrence:** Found on very high hill tops.
- **Status:** Endemic and Endangered. Few saplings growing well

**Pterocarpus marsupium Roxb. (Fabaceae) “Biyo”, “Indian Kino”, “Vijaysar”**

- **Taxonomy:** A tall tree. Leaves broadly compound. Flowers white. Fruits very long ca 95-100 cm. Seeds winged.
- **Occurrence:** Found on rocky, stony land in dry high hilly forest.
- **Status:** Endemic and Endangered. Few saplings growing well

**Sterculia urens Roxb. (Sterculiaceae) “Karaya gum”**

- **Taxonomy:** This is medium sized tree with rusty-tomentose flowers. Stem pure white. Fruits tomentose, dehiscent.
- **Occurrence:** Found on rocky, stony land in dry high hilly forest.
- **Status:** Well flourished in bed since seven years in botanical gardens.
- **Traditional Uses:** Roots are highly medicinal in treating cancer as substitute of *Rauwolfia serpentina*
Tinospora cordifolia (Willd.) Miers (Menispermaceae) "Giloy, ‘Amruta’, ‘Gulvel’

- **Taxonomy:** Climbing perennial herbs. Stem grey on maturity. Leaves cordate, glabrous. Flowers yellowish-green. Fruits dark red on maturity.
- **Occurrence:** Found in shady bushes along forests roads.
- **Status:** Rare in forests. Planted in garden.
- **Traditional Uses:** Gum pure white, transparent and highly medicinal in arthritis.

Tylophora indica (Burm. f.) Merrill. (Asclepiadaceae) "Asthma Veli"

- **Taxonomy:** A twinning herbs. Leaves dark green, cordate. Flowers green. Fruits: Follicles in Pairs
- **Occurrence:** Found on rocky boulders on high hill tops.
- **Status:** Occasional. Densely flourished over garden fencing.
- **Threats:** Overexploitation, habitat loss, open grazing

Ventilago denticulata Willd. (Rhamnaceae) “Lokhandi”

- **Taxonomy:** A woody perennial lianas. Leaves broadly ovate to elliptic. Flowers creamy-white or yellow. Fruits samaras, winged.
- **Occurrence:** Found in dense forest areas along bushes, small trees.
- **Status:** Rare. Conserved in botanical garden along pillars.
- **Traditional Uses:** Leaves are reputed medicine in chronic asthma and bronchitis.
- **Doses:** 4-5 Leaves taken orally on sharp 5-5.30 am for to cure chronic asthma.

Zingiber devakarianum (Zingiberaceae)

- **Taxonomy:** A tall herbs. Leaves broadly linear-lanceolate. Flowers yellow in spikes.
- **Occurrence:** Found on high hill tops
- **Threats:** Habitat loss and open grazing
- **Traditional Uses:** Fresh rhizomes are also used as to release gases. Rhizome powder is used for the treatment of severe pain, cooked and softened rhizome is used to treat toothache, cough, asthma, worms, leprosy, and other skin diseases.

**Results and Discussion**

Our botanical garden is now well flourished with rare, endangered and medicinal plants. **Ex-situ** conservation of potential plants with high medicinal value is in full process and are fully grown.

In proper season I am frequently going to field tours for collection of seeds, saplings, rhizomes etc. to multiply plants. We have successfully germinated the seeds of Terminalia bellirica.
(Behda) and about more than hundred saplings prepared and distributed to other botanical gardens of other colleges.

My main objectives are 1) To prepare saplings of rare, endangered, endemic and medicinal plants 2) To distribute saplings to different botanical gardens, research institutes and biodiversity parks in India 3) To distribute saplings of medicinal plants to societies locally as social program.

**Conclusion**

In the concluding remarks it is stated that in the present research and collective data the uses of plants mentioned as traditional uses are useful in pharmacy, pharmacognosy and related pharmacological researches.

**Acknowledgement**

None.

**Conflict of Interest**

No Conflict of interest.

**References**