Endangered Medicinal Plants

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Abstract:

A number of medicinal and herbal plants which yield drugs play a great role in human health care. But unfortunately due to dwindling populations and deforestation and overharvesting of the crops there is a habitat loss of these plants and medicines. To prevent these conditions everyone has to know the plants which are highly useful and fall in great risk in future. The present studies discuss some of the plants which are more important to human healthcare and may be extinct in future. As a result the future generation led a happy and healthy life by protecting these plants.

Key words: Herbal plants, Medicinal plants, products and ailments

INTRODUCTION

Plants have 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. Many of these phytochemicals have beneficial effects on long-term health when consumed by humans, and can be used to effectively treat human diseases. Chemical compounds in plants mediate their effects on the human body through processes identical to those already well understood for the chemical compounds in conventional drugs; thus herbal medicines do not differ greatly from conventional drugs in terms of how they work. This enables herbal medicines to be as effective as conventional medicines, but also gives them the same potential to cause harmful side effects (1, 2).

According to BGSI report states that plant extinctions are occurring at higher rates than natural background rates, and nearly 17,000 species of medicinal plants are now threatened. To overcome this problem everyone should know the plants and its use in medicine to provide good for human healthcare. The following are some of the plants help in human health care.

Panax quinquefolius (**American Ginseng**): It is a herb and perennial plant belongs to Ivy family which is commonly used as a herbal medicine in china. It ia native to eastern North America, and it is cultivated in places such as China (3). The plant is having a forked root and leaves were traditionally used for medicinal purpose. Ginseng is also negatively affected by deer browsing, urbanization and habitat fragmentation (4). It is also grown commercially, under artificial shade. Woods cultivated are usually harvested after 3 to 4 years depending on

cultivation technique. Wild simulated often requires up to 10 years before harvest (5). It is widely grown in Ontario, Canada (6). Ginsenosides or saponins are the major biologically active constituents.

Fig 1: *Panax quinquefolius*

Actaea racemosa **(Black snakeroot)**: It belongs to the family Ranunculaceae. This flowering plant is native to eastern North America. It grows in a variety of woodland habitats. The roots and rhizomes are used medicinally. The plant extraction posses analgesic, sedative and anti-inflammatory properties. Today the preparations such as tinctures or tablets of dried materials are used mainly to treat symptoms associated with menopause. The herbaceous perennial plant produces large compound leaves from the underground rhizome with a height of 25-60cm. (7). The basal leaves are up to 1 m long and broad, tripinnately compound having a serrate margin. The flowers are produced in late spring and early summer on a tall stem. The flowers have no petals or sepals. The flowers have a sweet, fetid smell that attracts flies, gnats and beetles (8). The fruit is a follicle of 5-10mm long containing several seeds (9). It grows in moist, heavy soil. It is used to treat gynecological and other disorders including sore throats, kidney problems and depressions. It also treats nervous disorders and rheumatism, a variety of maladies including endometritis and amenorrhea, dysmenorrheal, menorrhagia, sterility, severe after bith pains and for increased breast milk production (10).

Today it is used mainly as a dietary supplement to women as remedies for the symptoms of premenstrual tension, menopause and gynecological problems (11). The beneficial effects of these compounds on physiological pathways underlying age-related disorders like osteoporosis (12). The extraction helps in vaso relaxant activities (13). Like most of the plants the tissue and organs contain many organic compounds with biological activity (14, 15). These compounds bind and activate serotonin receptors (16). Complex biological molecules such as glycosides reduce cytokine-induced bone loss i.e. osteoporosis by blocking osteoclastogenesis. Sometimes it shows some adverse effect on liver and causes damage of the liver (17). The side effects include dizziness, headaches and seizures, diarrhea, nausea and vomiting, sweating, constipation, low blood pressure and slow heartbeats and weight problems (18).

Fig2: *Actaea racemosa*

***Sanguinaria Canadensis* - (Bloodroot):** This perennial flowering herb native to eastern North America. It belongs to the family Papaveraceae. It is also known as bloodwort, red puccoon root and pauson. In America it is known as tetterwort. In Britain it is called as Greater Celandine. Plants are variable in leaf and flower shape. The juice is red and poisonous and used to treat lumps (19). It grows to 20-50cm tall, multi lobed leaf up to 12cm. It stores sap in orange colored rhizome at the soil surface. The branching rhizome can grow into a large colony. Plants stat to bloom before the foliage unfolds in early spring and after blooming the leaves expand to their full size and go summer dormant in mid to late summer. The flowers are produced from March to May with 8-12 delicate white petals and yellow reproductive parts. The flowers appear over clasping leaves while blooming. The flowers are pollinated by small bees and flies, seeds develop in elongated green pods 40-60mm in length and ripen before the foliage goes dormant. The seeds are round in shape and when ripe are black to orange red in color. These plants are growing in moist to dry woods and thickets often on flood plains and near shores or streams on slopes, grow less frequently in cleanings and meadows or in dunes, rarely found in disturbed sites. The pollination is by ants called mymecochory. The seeds have a fleshy organ called elaiosome that attracts ants. The ants take the seeds to their nest, where they eat the elaiosomes and put the seeds in their nest debris and protected until it geminates. This plant produces alkaloids, a toxin sanguinarine.

Fig 3: *Sanguinaria Canadensis*

***Echinacea purpurea* (L.) Moench:** It is a popular perennial plant with smooth stem of 2-5ft and lavender colored flowers. The leaves are rough and scattered and smaller in size towards the top of the stem. Flowers occur singly at the top and the drooping stem purplish brown spines at the center. K The genus name is from the Greek echino, meaning hedgehog, a spiny brownish central disk. The flowers of the species are used to make extremely popular herbal tea, which strengthen the immune system; the extraction is in the form of tablet or liquid in pharmacies and health foods.

Fig 4: Echinacea purpurea

***Euphrasia* (Eyebright)**: It is a genus of 450 species of herbaceous flowering plants in Orobanchaceae family shows cosmopolitan distribution. They are semi-parasitic on grasses and other plants. It cures the eye infections. Flowers are zygomorphic and the lip like lower petal. The colour of the flower is purple, blue-white and violet. In some of the species the lower petal is having the yellow makings which act as a guide to pollinating insects. This plant helps to treat the bad memory and vertigo (20), swelling, visual disturbances caused b y blepharitis and conjunctivitis. This herb is also used for eyestrain and to relieve inflammation caused by colds, coughs, sinus infections, sore throats and hay fever.

Fig 5: Euphrasia sps

Goldenseal (***Hydrastis canadensis***): It is commonly called orange root or yellow puccoon (21). It is a perennial herb and belongs to Rannunclaceae. It is a native of Canada. The stem is purplish and hairy above ground and yellow below ground where it connects to the yellow rhizome. The plant bears two palmate, hairy leaves with 5-7 double toothed lobes and single, small, inconspicuous flowers with greenish white stamens and bears a single berry like a large raspberry with 10-30 seeds in the summer (22). It has bitter, anticatarrhal, anti-inflammatory, antimicrobial. Laxative, emmenaqoque and oxytocic herbal properties (23). It is often used as a multi-purpose remedy and has many medicinal properties. It is used as a topical antimicrobial and also taken as internally a digestion aid. It is often used to boost medicinal effects of other herbs it is blended or formulated. A second species from Japan, as Hydrastis palmatum, is now usually treated in a separate genus as Glaucidium palmatum. It is native of America. It was extensively used for cancers and swellings of the beasts by the Eclectics, while conium was used for smaller painless lumps. The two herbs alone were used for cancers and alternatives like red clover.

Ellingwood's American Materica Medica: It is useful for functional disorders of the stomach, catarrhal gastritis, atomic dyspepsia, chronic constipation, hepatic congestion, cirrhosis, protracted fevers, cerebral engorgements of a chronic character, uterine subinvolution, in menorrhagia or metrorrgagia from the displaced uterus, post partum hemorrhage, ulcerating, aphthous, indolent and unhealthy conditions of mucous surfaces, leucorrhea, galistones and breast swellings associated with the menses (24). It is anti-inflammatory, antiseptic, astringent, bitter tonic, laxative, anti-diabetic and muscular stimulant. It is very bitter, which stimulates the appetite and aids digestion, and often stimulates bile secretion (25, 26, 27, and 28). Goldenseal contains the isoquinoline alkaloids such as hydrastine, berberine, berberastine, hydrastinine, tetrahydroberb erastine, canadine and canalidine. As a result goldenseal contains a drug resistance efflux pump inhibitor, although many antimicrobial herbs. Berberine in humans can cause blocking of receptors in smooth muscle, blocking potassium channels in the heart and reducing ventricular tachycardia, inhibiting intestinal ion secretion and toxin formation in the gut and increasing bile secretion (29). While goldenseal like all alkaloid rich herbs including coffee and tobacco should be avoided during pregnancy and given to very young children with care, it appears that goldenseal is unlikely to be toxic in normal doses.

Golden seal is in serious danger to overharvesting according to CITES (30). More than 60 million golden seal plants are picked each year without being replaced (31). The process of mountain top removal mining has recently put the wild golden seal population at major risk due to loss of habitat, illegality of removing golden seal for transplant without registration while destruction in the process of removing the mountain top is permitted and increased economic pressure on stands outside of the removal area (32).

Fig 6: ***Hydrastis canadensis***

Ulmus rubra: It is commonly called Slippery Elm, native of eastern North America. The common names are Red Elm, Gray Elm, Soft Elm, Moose Elm and Indian Elm. It is widely used in dietary-supplement and alternative medicine information. It is a deciduous tree grows up to 65 feet in height and 50cm diameter. Its heat wood is reddish-brown in color and the leaves are 10-18cm long, coarse double serrate margins. The perfect, a petalous, wind pollinated flowers are produced before the leaves in early spring, usually in clusters of 10-20. The fruit is an oval winged samara about 20mm long that containing a single, central seed. The tree is reputedly less susceptible to Dutch elm disease damaged by the Elm Leaf Beetle Xanthogaleruca luteola. It grows in dry, intermediate soils (33). The Slippery elm has various traditional medicinal uses. The mucilaginous inner bark has been used as a demulcent. The leaves powder made into tea helps to soothe the digestive tract (34). The wood of the slippery is used for the hubs of wagon wheels, as it is shock resistant owing to the interlocking grain (34). The tree's fibrous inner bark produces a strong and durable fiber that can be spun into thread, twine, or rope useful for bow strings, ropes, jewellery, clothing, snowshoe bindings, woven mats, and even some musical instruments (35). The wood is also excellent for starting fires.

Fig 7: Ulmus rubra

Dioscorea villosa: This wild yam used to treat menstrual cramps and problems related to childbirth, as well as for upset stomach and coughs. It contains diosgenin. It is a phytoestrogen or plant based estrogen that can be chemically converted into a hormone called progesterone. The

wild yam to treat menstrual cramps, nausea and morning sickness, inflammation, osteoporosis, menopausal symptoms and other health conditions. It has been used to treat inflammation, muscle spasms and a range of disorders including asthma.

It is twining, tuberous vine native to North America and China. It contains diosgenin and has medicinal properties. It is a perennial vine with pale brown, knotty, woody cylindrical rootstocks or tubers. The roots are not fleshy. They are narrow and cooked and bear horizontal branches of long creeping runners. The thin reddish brown stems grow to a length of over 30 feet. The roots taste starchy and bitter and acrid. The wild yam plant has clusters of small, greenish-white and greenish-yellow flowers. The heart shaped leaves are long and broad and long stemmed. The upper surface of the leaves is smooth. The dried root or rhizome is used in commercial preparations. It contains diosgenin, a phytoestrogen that can be chemically converted to the hormone progesterone. The powdered form may be purchased in capsules or compressed tablets. The fluid extract can be made into tea. Wild yams are also used to prepare creams.

Fig 8: ***Dioscorea villosa***

Conclusion: All these plants are medicinally useful and treat a number of disorders. Now-a-days due to the pollution these useful plants are slowly disappearing. So because of these, the plants were endangered. If it happens continuously in future these plants are not found and the people suffer with different diseases and the life span was short.

Future aspects: Nature has produced wonderfully complex molecules that no synthetic chemist could ever dream up. The article shows that over 70% of therapeutics was derived from naturally-occurring products. Countless medicinal plants and herbs contain active ingredients that have yet to be scientifically identified. The extinction of these species would be an irreplaceable loss. To reduce pollution and protect these medicinal or herbal plants helps in many ways to people in future to increase their life span.

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