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Short communication

A review on traditional Medicinal Plants and their usage

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Abstract

Man uses medicinal plants in many ways to meet his basic need that is food, clothing and shelter since ancient times. As per World Health Organization (WHO) 80% of the world population still depend on medicinal plants. Medicinal plants have been utilized for a large number of years to flavour and preserve food, to treat wellbeing issue and to avoid illnesses including epidemics. These plants are rich source of bioactive components like phenols, flavonoids, triterpenoids, tannins etc. These bioactive components are rich source of functional foods. Recently medicinal plant based functional food becoming more popular among consumers due to constant health awareness, lesser side effects, availability and economic value. The medicinal plants based food may have antioxidant, antimicrobial, antiinflammatory, antidiabetic, anticarcinogenic, cadiotonic activities. Thus this review was undertaken to explain various aspects of different medicinal plants like giloy, curry leaf, amla, aloe vera and asparagus.

Keywords: Antimycotic activity, minimum inhibitory concentration, *Argemone mexicana* L.

Introduction

Plants have also been used as medicines for thousands of years all over the world. Globally, medicinal plants are being studied in order to develop new molecules for use in pharmacology, nutraceuticals, food supplements, folk medicines etc. A major traditional medicine which has been used as chemical compounds derived from medicinal plants (Amalraj & Gopi, 2017) [1]. Affirmation of the security, quality, and adequacy of therapeutic plants and natural products has now turned into a key issue in industrialized and in developing nations. Across the board utilization of home grown cures and healthcare preparations is depicted in the Vedas and the Bible (Shakya 2016) [22]. The information of their healing properties has been transmitted throughout the hundreds of years within and among human groups.

It has been reported that mostly plants have pharmacological effects because of metabolites. Plant-metabolites are organic compounds which can be classified into primary metabolites and secondary metabolites. Primary metabolites are organic compounds include glucose, starch, polysaccharide, protein, lipids and nucleic acid which are beneficial for growth and development of the human body. Plants synthesize secondary metabolites which include alkaloids, flavonoids, saponins, terpenoids, steroids, glycosides, tannins, volatile oils etc. (Gupta *et al.*, 2018) [11]. The therapeutic efficacy of plants is because of these secondary metabolites for curing many diseases. Phytochemicals are pharmacologically active compounds. These include alkaloids have an antispasmodic, antimalarial, analgesic, diuretic activities; Terpenoids are known for their antiviral, anthelmintic, antibacterial, anticancer, antimalarial, anti-inflammatory properties; Glycosides are reported for antifungal and antibacterial properties; Phenols and flavonoids have an antioxidant, anti-allergic, antibacterial properties etc. and Saponin also known for anti-inflammatory, antiviral, plant defence activities etc.

Tinospora (Tinospora cordifolia)

Menispermaceae

The most common names of *Tinospora cordifolia* is Amrita (Sanskrit), Guduchi (Hindi), Giloe (Bengali), Amritu (Malyalam), Amridavalli (Tamil), Amritaballi (Kannada), Tivantika (Telugu), Batindu (Punjab), Gulochi (Orissa).

Distribution

The plant is widely seen in tropical countries like India, Myanmar, Sri Lanka and in Andaman Islands. It is mostly found trailing on forest trees, fences and hedges along the boundaries.

Botany

Tinospora is a common climbing shrub which is used in medicine, usually in the fresh state, though it is commercially available in the dried state. It is a climbing shrub with rough corky bark. Leaves are glabrous, cordate 5-10cm broad, acute or acuminate. The plant is dioecious. Male flowers are in fascicles and sepals are oval in shape. Female flowers are usually solitary, having ovary on the fleshy receptacle. On ripening fruits are red (Joy *et al.*, 1998)^[16].

Bioactive Components

It has been observed that Carbohydrates are derived from mucilage layer of the plant under the rind, surrounding the inner parenchyma or gel (Sinha *et al.*, 2004)^[24]. They comprise both mono and polysaccharides. The most important are the long chain polysaccharides, comprising glucose and mannose, known as the glucomannans [β (1, 4) - linked acetylated mannan]. Xylose, rhamnose, galactose and arabinose are also present in trace amounts along with lupeol (a triterpenoid), cholesterol, campesterol and β -sitosterol (Husain *et al.*, 1992)^[14].

Health Benefits

The plant *Tinospora* is generally prescribed in general debility, diabetes, fever, jaundice, skin diseases, rheumatism, urinary diseases, dyspepsia, gout, gonorrhoea and leucorrhoea. It is probably the most useful preparation acting as a tonic and aphrodisiac. As a tonic it is best given in infusion with or without milk. It is a popular remedy for snake-bite and leprosy. The juice mixed with the pulp of long pepper and honey is a house hold remedy for gonorrhoea. Several oils for external applications are prepared with *amrita* and applied to skin diseases, rheumatic affections and other nervous complaints. A small quantity of bruised stem soaked for three hours in half a litre of water and strained combined with ammonium acetate is administered in intermittent and milder forms of fevers. It is rendered more agreeable with cinnamon, cloves and other aromatics (Viswanathan, 1997)^[32].

Nutritional Value

The proximate nutritional content of Giloy leaves which showed about 5.90% ash, 51.66% moisture content, 3.60% crude fat, 7.2 protein, 70.6% carbohydrate, 6.90% crude fibre and 310.90 Kcal/100g energy value (Pandey *et al.*, 2016).

Curry Leaf (*Murraya Koenigii*)

Rutaceae

The most common names of curry leaves are Kalasakh, Kaidaryah (Sanskrit), Mithinim (Hindi), Barsunga (Bengali), Karuveppu (Malyalam), (Tamil) Kariveppilai, Karuveppu (Kanadda), Karivepaku (Telugu), Bishahari (Assam).

Distribution

Today curry leaves are cultivated in India, Sri Lanka, Southeast Asia, Australia, the Pacific Islands and in Africa as a food flavouring (Singh *et al.*, 2014)^[23].

Botany

Curry leaves is a small aromatic tree with dark grey bark and

closely crowded spreading dark green foliage. Leaves are imparipinnate and alternate. Leaflets are alternate, obliquely ovate or somewhat rhomboid, gland dotted and strongly aromatic. Flowers are white, arranged in much branched terminal corymbose cymes and fragrant. Fruits are subglobose or ellipsoid berries, purplish black when ripe and 2-seeded (Warrier *et al.*, 1995)^[34].

Bioactive Components

All parts of curry leaves contain bioactive components; especially leaves contain proteins, carbohydrate, fiber, minerals, carotene, nicotinic acid, Vitamin C, Vitamin A, calcium and oxalic acid. Leaves of *Murraya koenigii* also contain crystalline glycosides, carbazole alkaloids, koenigin, girinimbin, iso-mahanimbin, koenine, koenidine and koenimbine. Triterpenoid alkaloids cyclomahanimbine, tetrahydromahanimbine are also present in the leaves. Murrayastine, murrayaline, pyrayafoline carbazole alkaloids and many other chemicals have been isolated from *Murraya* leaves. Bark contains carbazole alkaloids like murrayacine, murrayazolidine, murrayazoline, mahanimbine, girinimbine, koenioline and xynthyletin (Bhandari 2012)^[2].

Health Benefits

The roots, bark and leaves of curry leaves are having various health benefits mainly appetising, carminative, antiinflammatory, antibacterial and antiseptic property. Its leaves are helpful for appetite and digestion. It is reported to be useful in emaciation, skin diseases, hemopathy, worm troubles, neurosis and poisons (Hussain *et al.*, 1992)^[14]. They are useful in vitiated conditions of *kapha* and *pitta*, hyperdipna, colic, flatulence, diarrhoea, dysentery, vomiting, inflammations and foul ulcers (Sivarajan *et al.*, 1994)^[25].

Nutritional Value

The main nutrients found in curry leaves are carbohydrates, energy, fiber, calcium, phosphorous, iron, magnesium, copper, and minerals. It is rich source of various vitamins like nicotinic acid and vitamin C, vitamin A, vitamin B, vitamin E, antioxidants, plant sterols, amino acids, glycosides, and flavonoids. Also, nearly zero fat (0.1 g per 100 g) is found in them (Singh *et al.*, 2014)^[23].

Indian Gooseberry (*Phyllanthus emblica*)

Euphorbiaceae

The most common names of Indian gooseberry is Amalaka (Sanskrit), Adiphala (Hindi), Amla (Marathi), Amlaki (Bengali), Nelli (Tamil), Amalakam (Telugu), Ambala (Gujrati).

Distribution

Indian gooseberry is found through out tropical and subtropical India, Sri Lanka and Malaca. It is abundant in deciduous forests of Madhya Pradesh and Darjeeling, Sikkim and Kashmir. It is also widely cultivated.

Bioactive Components

The seeds of Amla fruit yield brownish yellow 16% fixed oil. It also contains tannins like glucogallia, corilagin, chebulagic acid and 3, 6-digalloyl glucose. Root of Amla fruit yields ellagic acid, lupeol, quercetin and β - sitosterol (Thakur *et al.*, 1989)^[30].

Health Benefits

Indian gooseberry or emblic myrobalan is a medium sized

tree the fruit of which is used in many Ayurvedic preparations since ancient time. It is useful in treating various diseases like haemorrhage, leucorrhoea, menorrhagia, diarrhoea and dysentery. It is reported that the combination of Amla and iron is useful for treating the various diseases like anaemia, jaundice and dyspepsia. *Sanjivani* pills are also available which is also made with other ingredients for use in typhoid, snake-bite and cholera. The green fruits are made into pickles and preserves to stimulate appetite. Seed is used for treating various diseases like asthma, bronchitis and biliousness. The combination of tender shoots of butter milk cures indigestion and diarrhoea. Leaves are also useful in conjunctivitis, inflammation, dyspepsia and dysentery. The bark has been used for various ailments including gonorrhoea, jaundice, diarrhoea and myalgia. The root bark is astringent and is useful in ulcerative stomatitis and gastrophelcosis. The anaemia, jaundice, heart complaints, and cold can be prevented by liquor fermented prepared from Amla fruit.

Nutritional Value

It is reported that fruit is a very rich source of Vitamin C (600mg/100g). It is used in preserves as a nutritive tonic in general weakness also (Dey, 1980) [8]. Amla fruit is good source of cytokinin like substances identified as zeatin, zeatin riboside and zeatin nucleotide.

Aloe (Aloe vera)

Liliaceae

The most common names of Aloe vera are Chinese Aloe, Indian Aloe, True Aloe, Barbados Aloe, Burn Aloe and First Aid Plant (Sahu *et al.*, 2013) [21].

Distribution

Although Aloe vera originated in the warm, dry climates of Africa, the plant is readily adaptable and occurs naturally worldwide.

Botany

Aloe *ferox* and Aloe vera belong to the family Liliaceae and the tribe Aloineae. Aloe are perennial succulents and are characterized by stemless large, thick, fleshy leaves that are lance shaped and have a sharp apex and a spiny margin. Aloe leaves have yellow latex, which is referred to as Aloe juice or sap and has a bitter taste. The leaf pulp is the innermost portion of the leaf and is composed of the parenchyma cells that contain the gel.

Bioactive Components

It is reported that plant contains flavonoids, terpenoids, lectins (Boudreau and Beland 2006; King *et al.*, 1995; Eshun and He., 2004) [3, 17, 9] fatty acids, cholesterol (Ni and Tizard 2004; Dagne *et al.*, 2014) mono and polysaccharides (pectins, hemicelluloses, glucomannan and mannose derivatives) (Femenia *et al.*, 1999; Choi and Chung 2003) [10, 5], tannins, sterols (lupeol, campesterol, and β sitosterol), salicylic acid, organic acids, enzymes, saponins, vitamins, minerals (Newall *et al.*, 1996) [18], saponins and enzymes such as catalase, amylase, cellulase and alliinase (Steenkamp and Stewart 2007) [26]. Minerals such as calcium, magnesium, potassium, sodium, aluminum, iron and zinc are present. Amino acids such as arginine, asparagine, glutamic acid, aspartic acid and serine are also present (Waller *et al.*, 1980) [33]. Vitamins such as B1, B2, B6, C, β -carotene, choline, folic acid, α -tocopherol are also present. Mannose 6 phosphate is a major sugar component in aloe vera (Joseph and Raj 2017).

Health Benefits

It has been reported that Aloe vera possess antiinflammatory, antioxidant and anticancer activity. It is also effective in treating various diseases such as stomach ailments, gastrointestinal problems, wound healing, burns, diarrhoea and in the treatment of skin diseases. Aloe vera are known for its astringent, haemostatic property. It is also reported for antidiabetic property (Yongchaiyudha 1996; Bunyapraphatsara 1996) [35, 4], anti-septic property (Sugata and Hirat 1983) [28], and antibacterial property (Rabe and Staden 1987). Currently the plant is widely used in skin care, cosmetics and as nutraceuticals.

Nutritional Value

Aloe vera offers a wide range of beneficial nutrients. It is a good source of 75 potentially active constituents: vitamins (vitamins A, C and E, vitamin B12, folic acid, and choline), enzymes (allicinase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase), minerals (calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc), sugars (glucose and fructose) and polysaccharides (glucomannans/polymannose), lignin, saponins, salicylic acids and amino acids (Surjushe *et al.*, 2008) [29].

Asparagus (*Asparagus racemosus*)

Liliaceae

The most common names of Asparagus is Satavari (Sanskrit) (Hindi) (Malyalam), Shatamuli (Bengali), Kilwari (Tamil), Aheruballi (Kannada), Philithaga (Telugu), Manajolo (Orissa).

Distribution

The plant is found wild in tropical and subtropical India including Andaman and Nicobar Islands. It is distributed from mean sea level upto 1500m in the Himalayas from Kashmir eastwards. The crop is cultivated in Kerala, Tamil Nadu, Andhra Pradesh and northern states in India. However, most of the requirement of the industry is met through wild collections from forests. It is also grown in gardens.

Botany

A. racemosus is an armed climbing undershrub with woody terete stems and recurved or rarely straight spines. The tuberous succulent roots are 30cm to 100cm or more in length, fascicled at the stem base, smooth tapering at both ends. Young stems are very delicate, brittle and smooth. Leaves are reduced to minute chaffy scales and spines; cladodes triquetrous, curved in tufts of 2-6. Flowers are white fragrant in simple or branched racemes on the naked nodes of the main shoots or in the axils of the thorns. Fruits are globular or obscurely 3-lobed, pulpy berries, on ripening purplish black in color; seeds with hard and brittle testa.

Bioactive Components

The major active constituents of Asparagus are steroidal saponins named as shatavarin I and shatavarin IV which are present in the roots. Asparagamine A, an alkaloid was isolated from root. Shatavarins are the glycoside of sarsapogenin which are generally occurring in two types of skeletons furostanols and spirostanols rhamnose. 8-methoxy-5, 6, 4'-trihydroxyisoflavone a new isoflavone was isolated by roots of Asparagus.

Health Benefits

The phyto-estrogenic plant is used in Ayurveda because of its immuno-modulatory effects. It exhibit immuno-protective effect in chemotherapy. Ethanolic leaf extract shows anti-inflammatory effect. It prevents diethylnitrosamine induced hepato-carcinogenesis. The roots are used to treat inflammations, nephropathy, hepatopathy and tumours. The roots extract has anti-oxidant activity. Polysaccharides were found to be responsible to increase Natural Killer (NK) cell activity and thus also involved in rejuvenating immune system (Subramanyam and Immanuel 2016).

Nutritional Value

It is reported that Asparagus roots contain protein 22%, fat 6.2%, Carbohydrate 3.2%, Vitamin B 0.36%, Vitamin C 0.04% and traces of Vitamin A (Joy *et al.*, 1998)^[16].

Summary

Herbs and their extracts have long been used for curing health related components and metabolic disorders as natural remedies. Functional components present in them aids in performing a wide range of biological functionalities. A considerable portion's functional food market consists of herbal supplemented functional foods. Research should be focused in development of food products enriched with medicinal plant. Scientific community must apply modern techniques to assure the efficacy and safety of herbs and their bioactive components for their use in food formulations.

References

1. Amalraj A, Gopi S. Medicinal properties of Terminalia arjuna (Roxb.) Wight & Arn.: a review. *Journal of traditional and complementary medicine*. 2017; 7(1):65-78.
2. Bhandari PR. Curry leaf (*Murraya koenigii*) or cure leaf: review of its curative properties. *Journal of medical nutrition and nutraceuticals*. 2012; 1(2):92.
3. Boudreau MD, Beland FA. An evaluation of the biological and toxicological properties of Aloe barbadensis (miller), Aloe vera. *Journal of Environmental Science and Health Part C*. 2006; 24(1):103-154.
4. Bunyapraphatsara N, Yongchaiyudha S, Rungpitarangsi V, Chochehajaroenporn O. Antidiabetic activity of Aloe vera L. juice II. Clinical trial in diabetes mellitus patients in combination with glibenclamide. *Phytomedicine*. 1996; 3(3):245-248.
5. Choi S, Chung MH. March. A review on the relationship between Aloe vera components and their biologic effects. In *Seminars in integrative medicine*. 2003; 1(1):53-62.
6. Dagne E, Bisrat D, Viljoen A, Van Wyk BE. Chemistry of Aloe species. *Current Organic Chemistry*. 2000; 4(10):1055-1078.
7. Deepika S, Selvaraj IC. Anticancer mechanism of unexplored plant compounds—a review. *Res J Biotechnol*. 2016; 11:109-128.
8. Dey AC. Indian Medicinal Plants Used in Ayurvedic Preparations. Bishen Singh, Mahendra Pal Singh, Dehra Dun-248001. 1980, 202.
9. Eshun K, He Q. Aloe vera: a valuable ingredient for the food, pharmaceutical and cosmetic industries—a review. *Critical reviews in food science and nutrition*. 2004; 44(2):91-96.
10. Femenia A, Sánchez ES, Simal S, Rosselló C. Compositional features of polysaccharides from Aloe vera (*Aloe barbadensis* Miller) plant tissues.

Carbohydrate polymers, 1999; 39(2):109-117.

11. Gupta S, Bishnoi JP, Kumar N, Kumar H, Nidheesh T. Terminalia arjuna (Roxb.) Wight & Arn.: Competent source of bioactive components in functional food and drugs, 2018.
12. Hayes PY, Jahidin AH, Lehmann R, Penman K, Kitching W, De Voss JJ. Asparinins, asparosides, curillins, curillosides and shavatarins: structural clarification with the isolation of shatavarin V, a new steroidal saponin from the root of *Asparagus racemosus*. *Tetrahedron letters*. 2006; 47(49):8683-8687.
13. Hoffmann D. The new holistic herbal: A herbal celebrating the wholeness of life. Element Books, 1990.
14. Husain A. Dictionary of Indian medicinal plants, 1992.
15. Joseph B, Raj SJ. Pharmacognostic and phytochemical properties of Aloe vera linn an overview. *International Journal of Pharmaceutical Sciences Review and Research*. 2010; 4(2):106-110.
16. Joy PP, Thomas J, Mathew S, Skaria BP. Medicinal plants. *Tropical horticulture*. 1998; 2:449-632.
17. King GK, Yates KM, Greenlee PG, Pierce KR, Ford CR, McAnalley BH *et al.* The effect of Acemannan Immunostimulant in combination with surgery and radiation therapy on spontaneous canine and feline fibrosarcomas. *Journal of the American Animal Hospital Association*. 1995; 31(5):439-447.
18. Newall CA, Anderson LA, Phillipson JD. Activities of crude leaf extracts of *Acalypha* Herbal medicines. The pharmaceutical Press wilkensiana. *Journal of Ethnopharmacology*, London, 1996, 25.
19. Pandey HC, Dixit RS, Sharma HP. A Bibliographical Note on Kali musli (*Curculigo orchioides* Gaertn.). *International Journal of Crude Drug Research*. 1983; 21(1):33-42.
20. Rabe T, Van Staden J. Antibacterial activity of South African plants used for medicinal purposes. *Journal of Ethnopharmacology*. 1997; 56(1):81-87.
21. Sahu PK, Giri DD, Singh R, Pandey P, Gupta S, Shrivastava AK *et al.* Therapeutic and medicinal uses of Aloe vera: a review. *Pharmacology & Pharmacy*, 2013; 4(08):599.
22. Shakya AK. Medicinal plants: future source of new drugs. *International Journal of Herbal Medicine*. 2016; 4(4):59-64.
23. Singh S, More PK, Mohan SM. Curry leaves (*Murraya koenigii* Linn. Sprengal)-a miracle plant. *Indian Journal of Scientific Research*. 2014; 4(1):46-52.
24. Sinha K, Mishra NP, Singh J, Khanuja SPS. *Tinospora cordifolia* (Guduchi), a reservoir plant for therapeutic applications: A Review, 2004.
25. Sivarajan VV, Balachandran I. Ayurvedic drugs and their plant sources. Oxford and IBH publishing, 1994.
26. Steenkamp V, Stewart MJ. Medicinal applications and toxicological activities of Aloe. *Products. Pharmaceutical biology*. 2007; 45(5):411-420.
27. Subramanian SS, Nair AGR. Chemical components of *Asparagus racemosus*. *Current Science*. 1968; 37(10):287-288.
28. Suga T, Hirata T. The efficacy of the aloe plants chemical-constituents and biological-activities. *Cosmetics & toiletries*. 1983; 98(6):105-108.
29. Surjushe A, Vasani R, Saple DG. Aloe vera: a short review. *Indian Journal of Dermatology*. 2008; 53(4):163.
30. Thakur RS, Puri HS, Husain A. Major Medicinal Plants of India, CIMAP, Lucknow, India, 1989.

31. Tizard IR, NI Y. Analytical methodology: the gel-analysis of aloe pulp and its derivatives. In *Aloes*. CRC Press, 2004, 129-144.
32. Viswanathan D. The twentieth century Sanjeevani. Science Express, 1997, 8.
33. Waller J, Klopfenstein T, Poos M. Distillers feeds as protein sources for growing ruminants. Journal of Animal Science. 1980; 51(5):1154-1167.
34. Warriar PK, Nambiar VPK. Indian medicinal plants: a compendium of 500 species (Vol. 5). Orient Blackswan, 1995.
35. Yongchaiyudha S, Rungpitarangsi V, Bunyaphatsara N, Chochechaijaroenporn O. Antidiabetic activity of Aloe vera L. juice. I. Clinical trial in new cases of diabetes mellitus. Phytomedicine. 1996; 3(3):241-243.