Indian traditional plants: medicinal properties and Human health

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ABSTRACT:

India is the indigenous country of traditional plant those have various medicinal activity to prevent different diseases. Indian traditional plant plays a conventional role to nourish human health. Medicinal plants contain bioactive components which functioned as secondary metabolites. These metabolites prevent many kinds of disorders without causing any side effects. Numerous pharmacological properties of medicinal plants (Tulsi, Neem, Bay leaves, Nishinda, Nayantara, Kalmegh, Mint etc.) have discussed in this review. They contain phytochemical components such as flavonoid, phenolics, phenylpropanoid, terpenoid, fatty acid, tannin, azadirachtine, azadirone, nimbin, nimbidin, menthone, pulegone, menthofuran, azulene. Due to presence of these bioactive compounds, it possesses pharmacological, therapeutic, pharmaceutical functions like antimicrobial, anti-obesity, anti-infective, antidiabetic, antileukemic, antiulcer, anticancer, antiallergic, antioxidant properties. The object of this review is aimed to elaborate the scientific discussion about phytoconstituent and pharmacological functions of these traditional medicinal plant.

Keywords: anti-carcinogenic activity, cardiovascular disease, medicinal properties, obesity, phenolics, phenylpropanoid, traditional plants.

INTRODUCTION

The traditional herbal treatment practise known as Ayurveda has a rich history and strong foundation in India. The prevention and treatment of human diseases depends heavily on herbal plants. Plants have been used as traditional medicine by humans for thousands of years (Shakya, 2016).

Traditional medicinal plants and human health:

Tulsi

In India, Tulsi is the very common ancient medicinal plant used in Ayurveda for preventing different diseases. It has lot of

benefits regarding disease prevention. Whole plant parts like seeds, leaves, roots are used in therapeutic areas (Anand et al., 2021).

Tulsi (Ocimum sanctum) is a fragrant herbaceous plant with a potent aroma that can be used as a spice, in cold orhot tea, or in herbal concoctions (de Castilho, 2023).

Poddar et al. (2020) reported that, Tulsi has various phytochemical compounds such as Phenolics, Flavonoid, Phenylpropanoid, Terpenoid, Fatty acids, Ursolic acids, Apigenin, Luteolin, Steroid, Eugenol, Carvacrol. In fresh state, leaves contain spathulenol, β eudesmol, Methyl chavicol (Prakash and Gupta, 2005). For the presence of bioactive compounds, this medicinal plant target numerous diseases like stress, anxiety, diabetes, tuberculosis, migraine, acne, delay aging, treat fever, common cold, malaria, bronchitis, migraine, hepatic complications, stomach problems, cardiovascular disease (Poddar et al., 2020). Furthermore, Tulsi highlights its own efficacy against influenza A virus HTN1, and SARS CoV-2 (severe acute respiratory syndrome coronavirus 2) (Joshi et al., 2014). Moreover, it acts as snakebite antidote (Poddar et al., 2020), Prevents the symptoms of asthma (Poddar et al., 2020). Specifically, Eugenol, linalool active against Candida albicans, candida tropicalis which is responsible for oral candidiasis (Khan et al., 2010). Moreover, Tulsi possesses numerous pharmacological functions like antimicrobial, antioxidant, anti-inflammatory. Anti-tussive, antidiabetic, antipyretic, anti-arthritic (Banik, 2018).

Notably, extracted oil of Tulsi prevent toothache. Moreover, dried leaves counteract gingival, periodontal disorders (Lakshmi, 2014). Essential oil target aerobic and anaerobic microbes (Kalra et al., 2019). Iqbal et al. (2020) had proposed that, Ethanolic extract of Ocimum sanctum block the prevalence of Streptococcus mutans as it contains Ursolic acids, Carvacrol, Eugenol (Agarwal et al., 2010).

Roy et al. (2022) Reported that Tulsi leaf may consume in raw state or it's extract combines with honey and eat orally 3-4 times per day to prevent the distress of cough and cold.

Tewari et al. (2020) reported that the oldest known medicinal plant in India is Tulsi, which has a wide range of positive effects on human health, including the prevention of viral fever and cough. Tulsi leaves acts as an immune booster to fight against virus infection.

Neem

Neem is the super most medicinal plants which establishes numerous preventive facts against metabolic disorders. In India Neem is very crucial medicinal plant to cure disorders. Stem is very beneficial as chewing sticks (Lakshmi et al., 2015). Malik et al., (2014); Vennila et al. (2012) noted that Neem bark carries also active compound, which have enormous antibacterial features. Neem oil and bark are essential for keeping healthy gum and also removes dental plaque. Neem leaf cure oral cavities. Furthermore, block the symptoms of bleeding gum. All parts of neemplay beneficiary role in dietetics.

The present study attempts to evaluate the Phytochemical compounds present in neem are Phenolic compounds, alkaloid, glycoside, terpenoid, flavonoid, azadirachtin, melianol, steroid, tannin, Azadirachtin, azadirone, nimbin, nimbidin, nimbinin (Poddar et al., 2020).

Due to the presence of bioactive compounds asthma, fever rheumatism, infestation, Tuberculosis, Diarrhoea,

jaundice, dysentery, small pox, infected gums, urinary tract diseases (Poddar et al., 2020). Monitor blood sugar level and counteract diabetes symptoms, healing wounds, ameliorate dengue, SARS COV - 2 (severe acute respiratory syndrome coronavirus 2) (Wintachai, et al., 2015; Murugan et al., 2020).

Neem is a long-used herbal remedy with positive effects on a number of viral infections. Several researchers have noted that neem has a biologically active substance that has antibacterial, antiviral, anti-inflammatory, and antifungal properties. Neem extract contains two significant components, isopropenoids and non-isoprenoids (Tewari et al., 2020).

Neem leaf contains over sixty distinct components, the majority of which have been chemically described (Hossain et al., 2013; Awofeso, 2011; Maity, 2009; Siddiqui et al., 2004).

In addition, Neem focuses numerous pharmacological functions like antimicrobial, anticancer, antifertility, anti- inflammatory, antimalarial, neuroprotective, used as an insect repellent (Koh et al., 2009).

Bay leaves

A culinary herb known as bay leaf or bay laurel is produced by the tiny evergreen Laurus nobilis L. tree (Singletary, 2021). Bay leaf carries aromatic properties which makes flavoured dishes. It may be used in whole or in grounded form at dry or fresh state. Leaves are pungent, also have strong taste.

Bay leaf contain different phytochemical compounds such as alkaloid, flavonoid, tannin, limonene, cineol, linalool, terpinol, phenol, coumarin, steroid, triterpene, saponin, Myrcene, Eugenol (Poddar et al., 2020).

Poddar et al. (2020) found that Bay leaves recover indigestion, bronchitis, influenza, upper respiratory tract distress, arthritis, cancer, renal disorders, rheumatic pain, skin irritation, promote adequate hunger, block urinary tract disorders. Pharmacological activities of bay leaves are also highlighted like anti-cancer, antimicrobial, antioxidant, antitussive, cardioprotective, gastroprotective, nematocidal, insecticidal.

Aljamal (2010) reported that in individuals with type 1 diabetes, bay leaves decreased levels of total cholesterol, LDL, triglycerides, and glucose while raising HDL levels.

Nishinda

According to Ayurveda, Nishinda is the predominant herbal medicinal plant. Nishinda have extensive therapeutic values to control different diseases (Tewari, 2019).

Nishinda contain phytochemical compounds such as flavonoid, amino acid, saponin, anthraquinone, tannin, triterpene, lignin, polyphenolics. Because of their excellent disease removing capacity, it improves otorrhoea, obesity manifestations, diabetes, muscular pain, cold, diarrhoea, muscular pain, swelled gums, skin disorders, arthritis, joint pain, colon cancer, scrofulous sores, burn, angina pectoris, Bronchitis (Poddar et al., 2020).

The extract gets from stem bark, leaves are very helpful to treat toothache, mouth ulcers, throat pain (Ullah et al., 2012), the decocted leaves are helpful for gargling (Maurya and Rao, 2019), also target leukoderma, inflammation, disorders of vision, enlarged spleen, gonorrhoea, arthritis (Tiwari and Tripathi, 2007).

Moreover, Tio2 extract gets from leaves of Nirgundi which expresses pediculicidal

and larvicidal functions against head louse, culexquinque fasciatus, anopheles subpictus (Gandhi et al., 2016).

Drumstick

Drumstick is the popular vegetables in Indian Cuisinart. Drumstick carries valuable therapeutic properties to mitigate metabolic diseases. Roots, flowers, pods and leaves are utilised. In post cooking condition, leaf and fruits are edible to regulate blood pressure and gastroenteritis.

Poddar et al. (2020) revealed that Drumstick contain phytochemical compounds such as alkaloid, flavonoid, steroid, tannin, saponin, glycoside, carotenoid, ascorbate, tocopherol, β sitosterol, moringine, kaempferol. That helps to prevent multiple disorders like ear and eye infection, toothache, HIV, cough and cold, balance blood sugar level, helps to maintains blood pressure, fever, typhoid, malaria, indigestion, diarrhoea, build up the strong immunity, used as snake medicines, improves lactation capacity of mother**.**

It has pharmacological functions such as mitigate oxidative damage, give protection to heart, antiproliferative, hepatoprotective, hypolipidemic, also has hypercholesteraemic properties, antioxidant activities, bear anti-inflammatory capacity, antinociceptive antimicrobial effects. (Saini and Sivanesan,2016).

Few studies have assessed that, cooked leaves and fruits of drumsticks may eat to control blood sugar level and prevent gastroenteritis (Roy et al., 2022).

Sweet broom

Sweet broom is used as extensive traditional medicine it had been utilized in treating diabetes in India. In Siddha, it plays advantageous function for curing the complication of kidney stones. Murti et al. (2012) revealed that, whole plant aerial parts are beneficial as medicine. Specifically leaves carries importance as herb to treat blennorrhagia, diabetes, stomach complications, pain in tooth etc. The secondary metabolites present in the sweet broom are flavonoid, alkaloid, tannin, triterpene, hexacosonal, β sitosterol, ketone-dulcitone, amellin, carbohydrate, protein, saponin, steroid that has also beneficial effects to improve the accumulation of cough, diarrhoeal symptoms, bronchitis, jaundice, cure the pain of menstruation, malaria, cure headache, improve liver disorders, burn, anaemia, urinary tract disease, ulcer symptoms, cure snake bites (Poddar et al., 2020).

Nayantara

Nayantara is used as ayurvedic medicine since before. In Indian Ayurvedic chapter, the components of roots and shoots of this flower are utilised as disease removing agents even though it is poisonous. Nayantara is an ornamental plant besides it is the medicinal plants. Leaves are good for therapeutic diet.

Poddar et al. (2020) reported that Nayantara has phytochemical components such as alkaloid, flavonoid, terpenoid, saponin, steroid, carbohydrate. Anthraquinone, glycosides, protein. These medicinal plants control the symptoms of leukaemia, helps to enhance the blood transport in the brain, remove hypertension, dizziness, trauma, solve out irregularity of menstruation, chronic constipation, dyspepsia, dengue, toothache, diabetes.

Because of their excellence, bioactive compounds functioned as Anti carcinogenic, anti-diabetic, antioxidant, antimicrobial, anti-helminthic, ani-sterility, anti-diarrhoeal, hypertensive

agent, cure the complexity of wounds (Koh et al., 2009).

Nayak and Pinto Pereira (2006) reported that more than 400 alkaloids were extracted from this plants that have beneficial effects on human health. Vinblastine and vincristine are 2 essential phytoconstituents. Another 2 bioactive components are vinorelbine, vindesine (Kothari et al., 2016; Martino et al., 2018). Vinblastine and vincristine are very much effective component to treat metastasis. Vincristine involves into cell death in acute lymphoblastic leukaemia cells with no significant mitotic arrest (Vilpo et al., 2000). Vinblastine forms fragments of microtubules (Vilpo et al., 2000). Vinblastine ameliorates all type of cancers, Hodgkin's and Non-Hodgkin's leukaemia, Nephroblastoma (Martino et al., 2018). Vincristine is applicable to treat leukaemia for children (Vilpo et al., 2000; Varsha et al., 2017). Vinorelbine and vindesine prevent cancer simultaneously and may be used in another chemotherapeutic compounds to treat cancer (Kothari et al., 2016).

Malabar spinach

Malabar spinach is the consumable perennial vine (Sreeja, 2014). It is used as leafy vegetable for human consumption. In India, Malabar spinach are very much applicable as traditional medicine (Islam et al., 2018). According to Islam et al., 2018, Ayurveda employs this spinach leaves for recovering the complication of oral cancer, leukaemia and melanoma. Shoots and leaves are edible part.

Kumar et al. (2013). Found that extracted leaf and seed contains enormous phytonutrients like phenol, flavonoid, alkaloid, tannins, saponins, steroid, phytosterols. Betacyanin, carotenoid, triterpene oligoglycosides, organic acids, basellsapoins A-D, kaempferol, Betalain, β sitosterol, terpenoids (Lupeol).

The plant had been described as anticonvulsant, anti-inflammatory, antifungal, analgesic agents. Moreover, applicable for, curing analgesic disorders, anaemia. Also used in analgesic therapy (Kumar et al., 2013; Deshmukhand Gaikwad, 2014). It carries lot of bioactive components like which possesses cytotoxic, antioxidant, hemagglutinating, antiproliferative functions upon cancer cells (Adhikari et al., 2012). methanolic extract of β- sitosterol, lupeol have cytotoxic efficacy toward cancer and leukaemia cells (Sushila et al., 2010). Specifically, methanolic contained leaf have reservation of growth of U937 leukaemia cells (Pal, 2015).

Kalmegh

Kalmegh is the traditional herbaceous plant. It has very much potentiating effect in Siddha and Ayurvedic medicines. It is one of the most significant medicinal plants (Verma et al., 2019).

Poddar et al. (2020) reported that Kalmegh helps to control the complications of diabetes mellites, blood pressure, peptic ulcer, leprosy, bronchitis, colic, influenza, cold, constipation, act as blood purifier, treat lung infections, escalate adequate hungriness.

It is widely recognised that, Kalmegh functioned as anti-inflammatory, antihyperglycemic, hepatoprotective, antimicrobial, anti-cancer, gastro curative, treats cardiac complications (Hossain et al., 2014). Kalmegh also fabricates antiviral functions like chicken guniya virus, influenza A, flavivirus, HIV antigen positive H9 cells and also SARS-CoV-2 (Hossain et al., 2021). Precisely, Extract from Leaf or whole plant mitigate complication of liver, high fever (Roy et

al., 2022).

Mint

Rita and Animesh (2011) noted that Mint contain phytochemical compounds such as flavonoid, carbohydrate, alkaloid, phenol, coumarin, saponin, steroid, essential oils like menthol, menthone, pulegone, menthofuran and azulene, choline, carotene, tannins. Due to the presence of secondary metabolites, it cures indigestion, diarrhoea, hyperacidity, anaemia, complication of morning sickness, bad breath, manifestations of gum bleeding, irritable bowel syndrome, tuberculosis, bronchitis, eczema, acne, anxiety, Crohn's disease symptoms, ameliorate liver and gall bladder complications (Poddar et al., 2020). Mint or Pudina are anti-bacterial, anti-inflammatory, antipyretic, anticancer, antiparasitic, antidiarrheal, anti-tussive that also have beneficial effects on human health (Roy et al., 2022).

CONCLUSION

Indian traditional plants have historically been used to promote human health. Bioactive elements found in medicinal plants served as secondary metabolites. These metabolites work without creating any negative side effects to prevent a wide range of illnesses. This review elaborates different medicinal plants from varied regions of India. Precisely, phytochemical compound should be the best choice for controlling the physiological complication rather than synthetic compounds. More Research is required to clarify importance of these medicinal plants because there is a gap about the quantity which is safe for consumption. This review provides a basic concept regarding bioactive compounds, essential oil, capability to block disorders along with pharmacological functions. Precisely, empirical studies are very much required to designate the ethnomedicinal values of Indian traditional medicinal plants.

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Conflict of Interest. None

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