

Phyto Immune Boosters: A Review

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Abstract

Plant based materials are employed in medicinal procedures in Ayurveda. They are generally non-toxic and have no negative effects. Medicinal plant parts in various forms are popular for their antiviral and immunity-boosting properties. Traditional medicine has remained the most economical and easily accessible therapeutic option in resource-poor communities' primary health care system. Traditional plant use for medical purposes has a long history among the locals. Plants have long been used for therapeutic purposes. According to texts, the usage of plants for therapeutic purposes dates back to 4000 - 5000 B.C., and the Chinese were the first to use natural herbal concoctions as medicines. However, in India, the earliest allusions to the use of plants as medicine can be found in the Rig-Veda, which is thought to have been written between 1600 and 3500 B.C. The characteristics and therapeutic benefits of medicinal plants were later investigated in depth and empirically recorded by ancient physicians (an indigenous system of medicine), laying the groundwork for modern medicine. Moreover, COVID-19 pandemic has taught us the importance of herbs in boosting immunity. We have learnt the value of hygiene and good health. A number of herbs have been used by people all around the world. It is vital to take extra precautions when fighting the deadly coronavirus. As a result, we must have a healthy and powerful immune system. The most effective method is to boost our immunity. The present paper attempts to describe the medicinal properties of certain herbs in a non technical manner.

Key Words: Immunity, COVID -19, Anti hypertensive, Disorders.

Introduction

The novel corona virus disease (COVID-19) has spread over the world, infecting over 50 million people and causing lakhs of deaths. People suffering from co morbidities like hypertension, liver and kidney diseases, diabetes, with decreased or compromised immunity are at a greater risk of contracting this virus and hence, strengthening the natural immune system could make a significant impact as a preventative measure. Ayurveda, Our ancient yet very relevant natural science of life, recommends simplifying one's lifestyle and encouraging awareness of the need of boosting and preserving one's health, (AYUSH,2020). Based on the Ayurvedic and scientific literature, the Ministry of AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homeopathy), India issued an advisory where it recommended the use of Kadha (herbal tea/decoction) composed of *Ocimum tenuiflorum* (Tulsi), *Tinospora cordifolia* (Giloy), *Cinnamomum verum* (Dalchini), *Piper nigrum* (Kalimirch), *Zingiber officinale* (Shunthi) and *Vitis vinifera* (Munakka) for self-care which will develop immunity against severe infection caused by COVID-19.

The enhanced efficacy of novel phytodrugs, as well as public awareness of natural product consumption, has sparked an enhanced interest in medicinal plants. A large variety of plants and their separate constituents have been discovered which possess antioxidant, anti-inflammatory, anticancer, antibacterial, and immunomodulatory properties (Butt and Sultan, 2011); Sultan et al., 2009; et al., 2009). In Plants, Thousands of bioactive chemicals are produced, and their complexity must be thoroughly researched (Schwager et al., 2008). Vitamins, antioxidants, dietary fibre, phytosterols, and other plant metabolites have health-promoting properties. These phytochemicals in the human diet have antimutagenic and immunomodulatory properties. Some of the common medicinally useful plants are as follows-

Tulsi (*Ocimum sanctum*, Lamiaceae):

Different plant parts of *Ocimum sanctum* have been advised for the treatment of various ailments in traditional medicine. Vitamin C, antioxidants, antibacterial, and antiviral properties are abundant in this herb. Tulsi is a herb that has been used to treat a variety of ailments. Because of its antimicrobial properties, it is a natural hand sanitizer. Tulsi tea might help

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with a cold or a sore throat. Tulsi might aid in the strengthening of the body.

Garlic (*Allium sativum*, Liliaceae):

Garlic has true health benefits as today it has become an important component of diet-based therapy and its use as a dietary supplement is recommended in many countries (Raman et al., 2008). Various garlic preparations such as aged garlic extract (AGE) and aqueous extract, garlic oil are being sold in the market with distinct health claims (Chandrashekar et al., 2011). Galeone et al. (2006) provided evidence using multivariate odd ratios that garlic is inversely associated with the risk of several common cancers. Some of its preparations like aged garlic extract and fresh garlic juice hold potential to inhibit cell proliferation and induce apoptosis. It is rightly believed that garlic is one of the most potential candidates as immune booster, improves the antioxidants status of the body, and protects body from free radicals, inflammation, and cancer insurgence.

Licourice (*Glycyrrhiza glabra*, Fabaceae):

Around 10 flavonoids have been isolated from this legume plant. Glycyrrhizin has anti-inflammatory and anti-allergic properties (Shibata, 2000), and its mode of action is actually revolve around production of IL-10 and IL-12 in large amount. Glycyrrhizin holds dose-dependent priming effect on lipopolysaccharide (LPS)-induced IL-12 p40 and IL-12 p70 (heterodimer of p40 and p35) protein production by peritoneal macrophages (PM). IL-12, being monocyte/macrophage-derived cytokine it plays a prominent role in the development of T helper type 1 (Th1) cell-mediated immune responses (Dai et al., 2001). Glycyrrhizin is well known to have various immunomodulating and biological response-modifier activities. Antioxidants present in licourice root are responsible for dilating blood vessels, avoid accumulation of plaque in arteries and veins, and regulate the quantity of fat in the blood. The enzymes present in the roots of Licourice plant, help the body produce lymphocytes and macrophages which are the body's natural defense against microbes, pollutants, allergens and cells which cause autoimmune diseases.

Giloy (*Tinospora cordifolia*, Menispermaceae):

Giloy is widely used in traditional Ayurvedic medicine in India. It has shown great potential for the development of biopharmaceutical products for the

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treatment of various diseases (Kirti et al.,2004). Giloy is a tonic and has alterative, diuretic, and aphrodisiac properties. It is a febrifuge used in malarial and chronic fever. It is also a liver tonic. Studies have reported diverse medicinal properties of the plant, including antispasmodic, antidiabetic, anti-arthritic, antiperiodic, antiinflammatory, antioxidant, antistress, anti-allergic, antimalarial, hepatoprotective, antileprotic, antineoplastic, and immunomodulatory activities (Neeraja and Margaret, 2013). The leaves extract has shown anti-HIV1 activity. Thus, it can be said that biological extract from this plant will certainly be helpful in protecting and treating various viral diseases in humans.

Black Pepper (*Piper nigrum*, Piperaceae):

The Black Pepper is used worldwide in different types of sauces, soups, Pickles and culinary preparations. It is known as the 'King of Spices'. It contains major pungent alkaloid Piperine which is known to possess many interesting pharmacological actions. It is widely used in different traditional systems of medicine like Ayurvedic and Unani System of medicines. Piperine exhibits diverse pharmacological activities like antihypertensive and antiplatelets , antioxidant, antitumor, antiasthmatics , antipyretic, analgesic, anti-inflammatory, anti-diarrheal, antispasmodic, anxiolytic, antidepressants , hepato-protective, immuno-modulatory, antibacterial, antifungal, anti-thyroids, antiapoptotic, anti-metastatic, antimutagenic, anti-spermatogenic, antiColon toxin, insecticidal and larvicidal activities etc. Piperine has been found to enhance the therapeutic efficacy of many drugs, vaccines and nutrients by increasing oral bioavailability by inhibiting various metabolising enzymes . It is also known to enhance cognitive action and Fertility. Piperine also found to stimulate the pancreatic and intestinal enzymes which aid to digestion. Many therapeutic activities of this spice are attributed to the presence of piperine apart from other chemical constituents(Damanhoury ZA, Ahmad A , 2014). The fruits of *Piper nigrum* are used to produce white and green peppers. *Piper nigrum* is also used as a flavoring agent .

Dalchini (*Cinnamomum verum*, Lauraceae):

Cinnamon is a coagulant and prevents bleeding . Cinnamon also increases the blood circulation in the uterus and advances tissue regeneration . This plant plays a vital role as a spice, but its essential oils and other constituents also have important activities, including antimicrobial(P. Hili, C. S. Evans,

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and R. G. Veness,1997) , antifungal , antioxidant and antidiabetic (S.-T. Chang, P.-F. Chen, and S.-C. Chang,2001) . Cinnamon has been used as anti-inflammatory , antitermitic , nematicidal , mosquito larvicidal , insecticidal , antimycotic, and anticancer agent . Cinnamon has also been traditionally used as tooth powder and to treat toothaches, dental problems (N. Hossein, et al, 2013). The aqueous extract and the fraction of cinnamon (procyanidins) from HPLC inhibit vascular endothelial growth factor subtype 2 (VEGFR2) kinase activity, thereby inhibiting the angiogenesis involved in cancer. The results of the study revealed that cinnamon could potentially be used in cancer prevention (J.Lu et al.2010).

Conclusion

A number of medicinal plants have been used in daily life without any side effects. Several reports have dealt with the numerous properties of their parts in the forms of bark, essential oils, bark powder, phenolic compounds, flavonoids, and isolated components. Each of these properties plays a key role in the advancement of human health. The antioxidant and antimicrobial activities may occur through the direct action on oxidants or microbes, whereas the anti-inflammatory, anticancer, and antidiabetic activities occur indirectly via receptor-mediated mechanisms. The significant health benefits of numerous types of these plants have been explored. Urbanization and modernization for the last few decades has drastically changed our lifestyle, food habits and working schedule. As a result, we are not as resistant to diseases as our ancestors used to be. Therefore, there is a need to incorporate the medicinal plants presented in this study which are rich in Vitamin A,C, Zn, Mg and other antioxidant into our day-to-day lives with some modern twist for boosting immunity. Plant tissue culture techniques are the need of the hour for rapid propagation of these plants for their conservation and for the enhancement of secondary products. Further detailed research studies are needed to obtain more scientific data on these miraculous plants.

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