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Herbal Immune Booster Plant- A Review

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ABSTRACT

The Ayurvedic approach to health plays an important role in the traditional system in India. Ayurvedic herbs have been used for thousands of years to cleanse the body, support the immune system, and maintain balance within the mind, body and soul. These herbs for immunity have been continuously adopted into modern remedies worldwide. There are many potentially harmful actions people take every that can impact their immune system. From the foods that they eat and don't eat, insufficient water intake, sedentary lifestyle, high stress, and not getting an adequate amount of sleep each of these things affect the function of the body and can cause a weakened immune system. But there are simple things that you can do that can help improve your health by modulating your immunity and boosting your overall wellness. Building a strong immune system comes as a result of optimizing your digestion, metabolism, liver function and hormone function. This optimization can help protect your body and promote an overall improvement in your well-being. You'll definitely want herbs for immunity at arm's reach during season changes to maintain health and vitality.

INTRODUCTION

The immune system is our most important ally and its main function is to keep us healthy and strong. If we eat foods that are completely pure and rich in vitamins, enzymes and minerals, our immune system can continue to fight off viruses, harmful bacteria, parasites and toxins. The idea of boosting immunity is appealing, but the opportunity to do so has proven elusive for a number of reasons. The immune system is just that - a system, not a single entity. To function well, it needs balance and harmony. There's still a lot researchers don't understand about the complexity and interrelationships of the immune response. Nature has endowed mankind with abundant herbs, which can treat various health problems quickly and effectively. These herbs allow people to boost their immunity during times of health crisis, like COVID-19. People should be aware of new concepts of quarantine and self-isolation when trying immune-boosting herbs. It is necessary to understand the correlation between herbs, the immune system and Covid-19. People with weakened immune systems, especially the young and the elderly. The immune system is built on beneficial living bacteria that live in the gut, which protect the body against various diseases. When the immune system response is weak, weak or compromised, it becomes an open invitation to infections like the coronavirus or other illnesses like diabetes, heart disease or cancer. In this article, we are discussing several plants and herbs that have great medicinal value as blessings in fighting various diseases such as Garlic (*Allium sativum*), Neem (*Azadirachta indica*), Basil (*Ocimum sanctum*), Giloy (*Tinospora cordifolia*), Clove (*Syzygium aromaticum*), Ginseng (*Panax quinquefolius* L.), Betel nut (*Piper betel*), Black paper (*Piper nigrum*)), black cumin (*Black cumin* L.), ashwagandha (*Withania somnifera*), astragalus licorice (*Astragalus glycyphyllos*), turmeric (*Curcuma domestica*), elderberry (*Sambucus nigra*), nasturtium (*Tinospora cordifolia*), etc. These plants are known to be rich in antioxidants, vitamins, proteins, carbohydrates, dietary fiber, amino acids, minerals, steroids, alkaloids, antiviral and antibacterial phytochemicals that help restore the immune system.[1-4]

Immunity

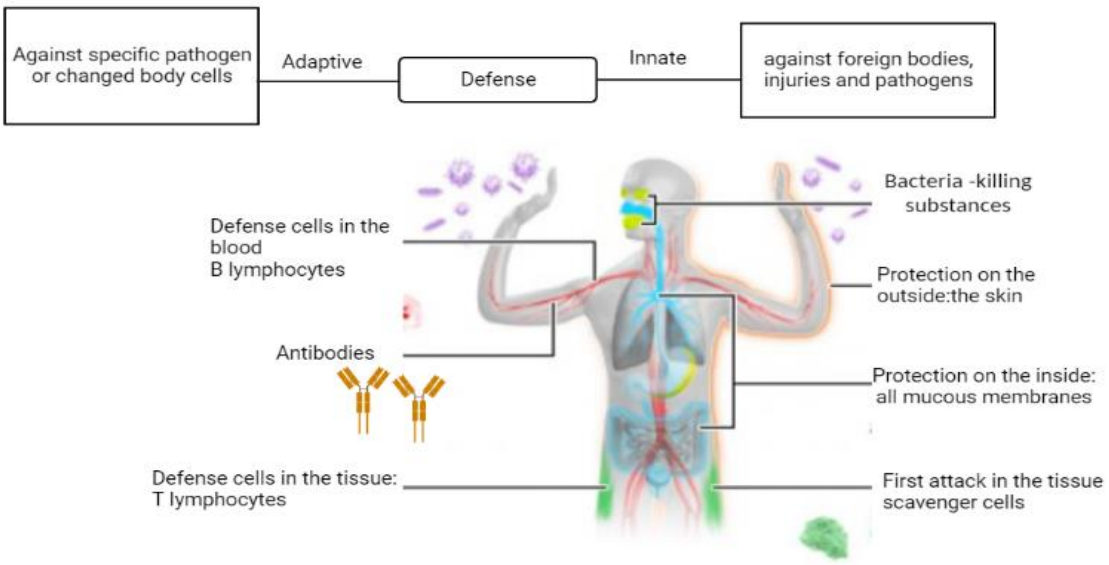

Fig.1-Importance of the immune system in Health and Disease [6]

Immunity:

The term immunity in a biologic context has historically referred to resistance to pathogens; however, reactions to some noninfectious substances including harmless environmental molecules, tumors, and even unaltered host components are also considered forms of immunity (Allergy, tumor immunity, and respectively). The collection of cells, tissues, and molecules that mediate these reactions is called the immune system, and the coordinated response of these cells and molecules to pathogens and other substances comprises an immune response. The most important physiologic function of the immune system is to prevent or eradicate infections.

Types of immunity

Immune system can be divided into two parts-innate and adaptive. Our first line of defence the natural protection power we are born with is innate immunity and this innate response acts quickly. The protection that we gain through life when we are exposed to various diseases or protection against them for vaccination is adaptive immunity, this adaptive immunity generates antibodies when it spots an enemy in the body. The adaptive immunity takes 5 to 10 days to generate antibodies and meanwhile innate immunity keeps fighting to maintain the levels of pathogens.[6-8]

Innate immunity:

During infection, the most common host response is inflammation. Viruses without cytopathological lesions early in infection inhibit the induction of acute phase protein responses because early monocytes are not activated. In contrast, natural killer cells participate in antivirus and play an important role in host defense. They recognize virus-infected cells antigen-independently, exert cytotoxic activity, and rapidly produce a large amount of interferon-γ to participate in the antivirus. -virus. Activation. adaptive immune cells. It is the first line of defence against infections. is a quick response (minutes); it is not specific to a pathogen. It has no memory and does not confer lasting immunity to the host. It has 4 main components, which are found in all kinds of plants and animals. The innate immune system includes defences against infection that can be activated immediately after attack by a pathogen. The innate immune system basically consists of barriers designed to keep viruses, bacteria, parasites, and other foreign bodies out of your body, or to limit their ability to spread and move through your body. The innate immune system includes:

Physical Barriers

Such as skin, the gastrointestinal tract, the respiratory tract, the nasopharynx, cilia, eyelashes and other body hair.

Defence Mechanisms

Such as secretions, mucous, bile, gastric acid, saliva, tears, and sweat.

General Immune Responses

such as inflammation, complement, and non-specific cellular responses. The inflammatory response actively brings immune cells to the site of an infection by increasing blood flow to the area. Complement is an immune response that marks pathogens for destruction and makes holes in the cell membrane of the pathogen.[50]

Acquired immunity:

Acquired immunity relies on the capacity of immune cells to distinguish between the body's own cells and unwanted invaders. The host's cells express "self" antigens. These antigens are different from those on the surface of bacteria or on the surface of virus-infected host cells

("non-self" or "foreign" antigens). Microorganisms that overcome or circumvent the innate non-specific defence mechanisms or are administered deliberately (active immunization) come up against the host's second line of defence: acquired immunity.[6-9]

Mechanism of Immunity:

The immune mechanism can be produced when the infection agents attack our body or go through vaccination. However, the same immune mechanism (Antibodies and cytotoxic T-cells) which were discussed earlier, in certain situations can cause the destruction to the cells or tissues in our body Macrophage captures engulfs and digests an antigen. Macrophage presents a fragment of the antigen on its surface and then interaction between proteins on the macrophage and helper T cell occur, activating the helper T cell proliferates into either TH 1 or TH 2 cells, which secrete different types of cytokines. Cytokines secreted by the TH 1 cell activate a cytotoxic T cell to kill the infected target cell.[8,10]

IMMUNITY BOOSTER:

The immune system is responsible for fighting off foreign invaders in the body, such as disease-causing bacteria and viruses, and destroying cells in the body when they become cancerous. Malnutrition can lead to increased infections, slower healing of wounds and infections, and increased susceptibility to symptoms and complications of immune system dysfunction. Research has shown that immune function generally declines with age, and recent studies have shown that this decline is also nutrition-related and can be slowed or even stopped by maintaining a healthy diet. Certain foods can help boost your immune system and prevent colds and flu. Here are five nutrients your immune system needs to function and what foods you can find them in. Your immune system maintains homeostasis by fighting viruses and bacteria that can cause inflammation, disease, and illness in your body. Nutrient deficiencies impair immune function and increase the risk and severity of infection. Boosting your immunity means eating or consuming certain foods that provide additional benefits to your body. To boost immunity, it is important to eat the right foods of the right type is shown in fig 2.[11,12]

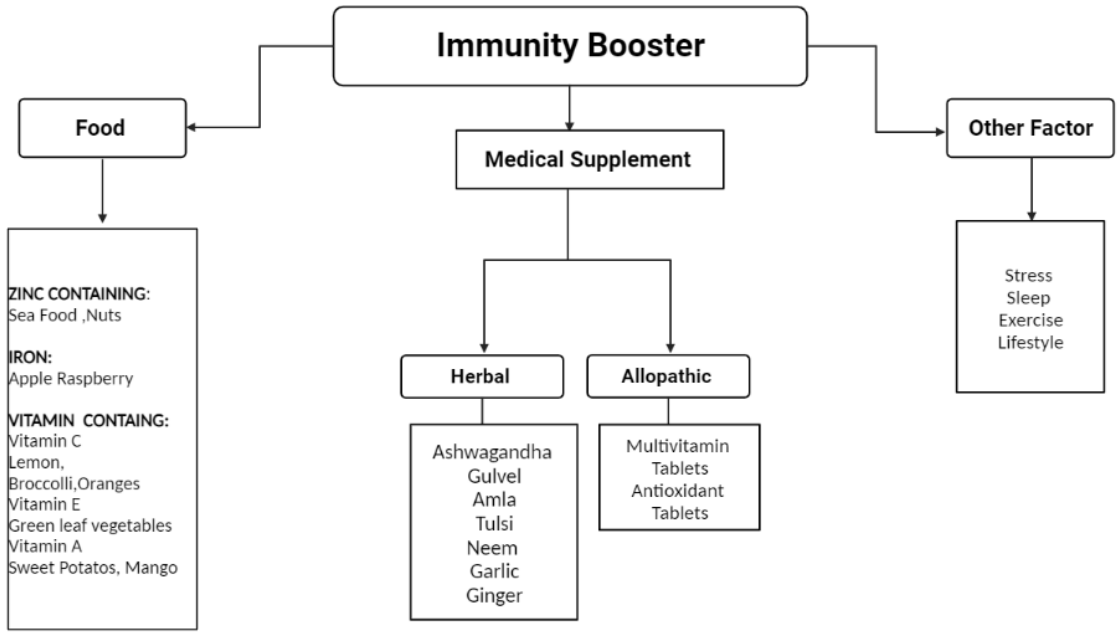

Fig.2 The Various Types of Immunity booster

Medicinal Plants and Herbs

Medicinal plants are considered as rich resources of ingredients which can be used in drug development pharmacopoeial, non- pharmacopoeial or synthetic drugs. There are many benefits of Herbal Medicine like easier to obtain than prescription medicine, Stabilizes hormones and metabolism, Natural healing, Strength in immune system. According to the World Health Organisation, around 80% of the world's population uses herbal medicines for primary health care, particularly across Europe and South Asia. Research indicates that many of these herbs not only have anti-inflammatory properties, they also help build up the body's natural immunity. And unlike allopathic medicines like antibiotics, which can have serious side effects, most of these herbs and spices are relatively safe.

Modern research on remedies of natural origin has pointed out that a number of herbs have complex actions on immune function and acts at many different sites in the overall cascade of immune events and can act as strong Immune Stimulators. According to WHO around 80 % of the world's population uses herbal medicines to boost their immunity. And maintain primary health. This review article gives an overall view about some natural herbs.[13-16]

OCIMUM TENUIFLORUM:

Tulsi is extremely useful for treating bacterial and fungal infections as well as immunological disorders like allergies and asthma. Explaining the benefits of Tulsi, Haritha says, it is rich in Vitamin C and Zinc and acts as a natural immune booster. The leaves of *Ocimum tenuiflorum* shown in Fig 3.

Synonym: *Ocimum sanctum*.

Family: Lamiaceae.

Biological name: *Ocimum tenuiflorum*.

Chemical constituents:

Oleanolic acid, Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, Linalool, and

β-caryophyllene.

Biological role:

Antibiotic, Anti-bacterial, Antiviral, Anti-stress agent,

anti- inflammatory, Anti-fungal.

Uses:

Tulsi plant indoors can help protect you from certain infections and diseases such as cold, cough, and viral infections. These strong disinfectant and germicidal factors are not the only reason why Tulsi is a great herb for boosting your immunity.[40,41,35]

Fig.3: The Leaves of *Ocimum tenuiflorum*

AZADIRACHTA INDICA:

Purified extracts of neem contained immunomodulators that stimulate the cells and macrophages that terminate. The Leaves of *Azadirachta indica* shown in Fig 4.

Biological name: *Azadirachta indica*.

Family: Meliaceae

Chemical constituents:

Neem leaves: Azadirachtin, meliacin, quercetin, nembosterol, ascorbic acid, carotenoids, amino acid etc.

Neem seed: Azadirachtin

Neem kernals: oil of margosa.

Neem barks: Nimbin, nimbinine, nimbidine,

nimbosterol, nimbidol and margosin.

Biological source: Neem consists of the fresh or dried leaves and seed oil of A. indica.

Biological role:

Neem plants parts show antimicrobial role through inhibitory effect on microbial growth/potentiality of cell wall breakdown. Azadirachtin, a complex tetranortriterpenoid limonoid present in seeds, is the key constituent responsible for both antifeedant and toxic effects in insects.

Use:

Neem helps boost your immune system while cooling down your body internally. It possesses both antibacterial and anti-fungal properties that help keep your skin clean, radiant and healthy. Neem also has blood purifying properties.[44,45,43]

Fig.4: **The leaves of *Azadirachta indica***

CURCUMA LONGA:

Family: Zingiberaceae.

Botanical name: Curcuma longa.

Common name: Turmeric

Biological role:

Antiseptic, Immunomodulator, Anti- inflammatory.

Chemical constituents:

Turmeric powder is about 60 to 70 % carbohydrates, 6 to 13 % water, 6 to 8 % protein, 5 to 10 % fat, 3 to 7 % dietary minerals, 3 to 7 % essential oils, 2 to 7 % dietary fiber, and 1 to 6 % curcuminoids.

Uses:

Turmeric is among the richest food sources of Iron 67.8 mg per 100 g of turmeric powder. One teaspoon (3 g) of turmeric powder provides 2 mg of Iron. Iron is important for improving immunities power and turmeric has riches Iron.[45]

Fig 5. The root Parts of *Curcuma longa*.

***PANAX GINSENG*:**

Family: Araliaceae.

Common names:

Asiatic ginseng, Chinese ginseng, five fingers, Japanese ginseng, jintsam.

Chemicals:

Panax ginseng contains triterpene glycosides, or saponins, commonly referred to asginsenosides. Many active compounds can be found in all parts of the plant, including amino acids, alkaloids, phenols, proteins, polypeptides, and vitamins B1 and B2. The whole plant of Panax ginseng shown in Fig 6.

Uses:

Ginseng has been used for a variety of purposes for about 5000 years. It has been used to increase physical endurance and lessen fatigue, to improve the ability to cope with stress, and to improve concentration. It is also used for anaemia, diabetes, gastritis, neurasthenia, erectile dysfunction, impotence and male fertility, fever, hangover, and asthma. P. ginseng is also used for bleeding disorders, loss of appetite, vomiting, colitis, dysentery, cancer, insomnia, neuralgia, rheumatism, dizziness, headache, convulsions, disorders of pregnancy and childbirth, hot flashes due to menopause, and to slow the aging process. Research reviews postulate that extracts of P. ginseng affect the hypothalamus pituitary- adrenal axis and the immune system. The authors concluded ginseng extract stimulates the immune system and the standardized extract is more effective than the liquid ginseng extract. Some of the same researchers examined the effects of P. ginseng extract on the immune response to vaccination.[31,33,34]

Fig 6. The whole plant of *Panax ginseng*.

ZINGIBER OFFICINALE

Ginger is one of the most effective natural Immunomodulators. In vitro study found that ginger inhibited lymphocyte proliferation; this was mediated by reductions in IL-2 and IL-10 production. Ginger essential oil showed improvement in humoral and cell mediated immune response in immune suppressed mice. The Root Parts of Z. officinale shown in Fig 7.

Family: Zingiberaceae.

Common name- Adarak, Ginger.

Chemical constituents: 6 - gingerol, 6 - shogal, 6 –parasol.

Biological source:

Ginger consists of the rhizomes, Roscoe and dried in the sun.

Biological role:

Antioxidant, Anti-inflammatory, Aanti-cancer Immunomodulatory, Antidiabetic.

Uses:

Ginger can help improve immune health due to its antioxidant and anti-inflammatory effects. In fact, starting your morning with a glass of ginger tea or ginger kashayam may ward off illness and boost the immune system.[46]

Fig 7. The root parts of *Zingiber officinale*.

***TINOSPORA CORDIFOLIA*:**

It has been reported that Gulvel has potential immunomodulatory and cytotoxic effects. They have been reported to function by boosting phagocytosis activity of macrophages, production ROS in human neutrophil cells, enhancement in nitric oxide production by stimulation of macrophages.

Family: Menispermaceae.

Common name: Gulvel.

Chemical constitutes:

Active compounds 11-hydroxymustakone, N-methyl-2- pyrrolidone, N-formylannonain, cordifolioside A, magnoflorine, tinocordiside and syringing. The whole plant of T. cordifolia shown in Fig 8.

Biological name: *Tinospora cordifolia*.

Biological role:

T. cordifolia extracts are extensively used in various herbal preparations for the treatment of different ailments for its anti-periodic, anti-spasmodic, antimicrobial, anti-osteoporotic, anti-inflammatory, antiarthritic, anti-allergic, and anti-diabetic properties.

Uses:

Tinospora cordifolia has an importance in traditional Ayurvedic medicine used for ages in the treatment of fever, jaundice, chronic diarrhea, cancer, dysentery, bone fracture, pain, asthma, skin disease, poisonous insect, snake bite, eye disorders.[26-30]

Fig.8 The leaves of Tinospora cordifolia.

EMBLICA OFFICINALIS:

The fruit extract of *Emblica officinalis* (Amla) has been shown to have free radical scavenging activity and immunomodulatory properties.

Family: Phyllanthaceae.

Common name: Amla.

Botanical name:

Phyllanthus emblica, Emblica arborea Raf, Amla.

Chemical constituents:

Emblicanin A (37 %), emblicanin B (33 %), punigluconin (12 %), and pedunculagin (14 %) Amla also contains punicafolin and phyllanemblinin A, phyllanemblin other polyphenols, such as flavonoids, kaempferol, ellagic acid, and gallic acid. The fruit part of E. officinalis shown in Fig 9.

Uses:

Amla is Vitamin C rich fruit which boosts the production of white blood cells (WBC) in the body that help in fighting several infections and diseases. Amla is also rich in Iron, calcium and several other minerals which make the complete nutritional fruit.[37-39]

Fig 9. The fruit part of *Emblica officinalis*.

ECHINACEA PERPUREA:

Family: Asteraceae.

Common names:

Purple coneflower, Sampson, Snakeroot, Red sunflower.

Chemical constituents:

Echinacea are known to include mucopolycaccharides, echinacoside, echinaceine, isobutylmines, linoleic and polyacetylenes, sesquiterenes, betaine, and phenolics.Echinacea also contains small amounts of iron, iodine, copper, potassium, sulphur, vitamin A, vitamin E and vitamin C.

Uses:

Research to date shows that echinacea can help treat a cold, but it won't prevent one. Echinacea is also used against many other infections including the urinary tract infections, vaginal yeast infections, genital herpes, bloodstream infections (septicemia), gum disease, tonsillitis, streptococcus infections, syphilis, typhoid, malaria and diphtheria. Echinacea is one of the most popular herbs and has been extensively studied for its effects on the immune

system. It has been used as an immune stimulant for a variety of afflictions including colds and flu. Echinacea is widely promoted for its ability to "boost" the immune system. The fruit part of *Echinacea purpurea* shown in Fig 10.[40,41]

Fig 10. The flowering plant of *Echinacea purpurea*

***WITHANIA SOMNIFERA*:**

Family: Solanaceae.

Common names: Ashwagandha, Indian ginseng, Indian Winter Cherry.

Biological role:

It is used as Antioxidant. On oral administration, Ashwagandha churna showed a significant increase in neutrophil adhesion and delayed-type hypersensitivity (DTH) response. It is concluded that Ashwagandha churna significantly potentiated cellular immunity. Ashwagandha also provides numerous other benefits for your body and brain. For example, it can boost brain function, lower blood sugar and cortisol levels, and help fight symptoms of anxiety and depression. The whole plant of *W. somnifera* shown in Fig11.

Uses:

A team of Portland medical researchers has found that drinking whole cows' milk with Ashwagandha; an herb used for more than 5,000 years in the practice of Ayurvedic medicine

can increase the body's white blood cells, which help boost immunity. Ashwagandha has long been considered as an excellent rejuvenator, a general health tonic and a cure for a number of health complaints. It is a sedative, diuretic, anti-inflammatory, immune stimulatory, increases energy, endurance, and acts as an-adaptogen and an-antistress agent.[30-35]

Fig 11. The whole plant of *Withania somnifera*

***UNCARIA TOMENTOSA*:**

Cat's claw has several groups of active components that account for much of the plant's actions and uses. The leaves of Uncaria tomentosa shown in Fig 12.

Family: Rubiaceae.

Common names: Cat’s claw, una de gato

Chemical constituents:

These include oxindole alkaloids (rhynchophylline, alloptropodine, alloisopteropodine, isopteropodine, and uncarine), quinovic acid, triterpenes, polyphenols, proanthocyanidins, phytosterols (beta-sitosterol, stigmasterol, and campesterol), and catechin tannins

Uses:

These compounds possess immune augmenting, antimicrobial, anti-tumor, anti-allergic, anti-ulcer, antioxidant, anti-inflammatory and adaptogen properties Many studies have shown it to

enhance immunity and heal digestive and intestinal disorders making it a choice among many for the treatment of Acquired Immune Deficiency Syndrome (AIDS) and Human Immunodeficiency Virus (HIV) infection; cancer.[43]

Fig12. The whole plant of *Uncaria tomentosa*.

***ALOE BARBADENSIS*:**

Family: Asphodelaceae.

Common name: Aloe vera.

Chemical constituents:

Vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids. It contains vitamins A (beta-carotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline. The whole parts of *Aloe barbadensis* shown in Fig 12.

Uses:

Support the immune and cardiovascular system. A. Vera contains amino acids, minerals and vitamins.[35]

Fig 13. The whole parts of *Aloe barbadensis*.

***ALLIUM SATIVUM*:**

Garlic is considered as a capable candidate for maintaining the homeostasis of the immune system. It has been found that garlic protein fraction has a stimulatory effect on lymphocytes, Natural Killer (NK) cells, and macrophages cytotoxicity. The bulb Parts of Allium sativum shown in Fig 13.

Family: Alliaceae.

Common name: Lahsun.

Chemical constituents:

Carbohydrates, protein, mucilago.

Biological source:

It consists of ripe bulbs of *Allium sativum*.

Biological role:

Antioxidant, anti-inflammatory, Immunomodulator, Antifungal, antibacterial.

Uses:

The main ingredient of garlic which fights the germs is Allicin and the best way to use garlic as an immune booster is to eat it raw. Chewing garlic releases the Allicin in the mouth which is absorbed by the body.[36]

Fig 14. The bulb Parts of *Allium sativum*.

***SYZGIUM AROMATICUM*:**

Family: Myrtaceae

Common Name: Clove

Chemical Constituents: 89% of the clove essential oil is eugenol and 5% to 15% is eugenol acetate and ß-caricofileno.

Biological Source: Cloves are the aromatic flower buds of a tree in the family Mytraceae

Biological Role: *Syzygium aromaticum*

Clove essential oil may have Nutritional Therapeutic Potential effects due to its various effects, which includes antimicrobial, anti-fungal, anti-viral, anti-inflammatory, cytotoxic, analgesic, anesthetic activities, very potent as antioxidants, and inhibits post binding entry of severe acute respiratory syndrome (SARS) coronavirus into cells. Besides, anti-platelet activities; prevent the formation of a thrombus or a blood clotting.

Uses:

It is commonly used in antioxidants. These compounds help your body to fight free radicals, which damage your cells and can lead to disease. By removing free radicals from system, the antioxidants found in cloves can help reduce risk of developing heart disease, diabetes and certain cancers.[52]

Fig 15. The whole plant *Syzygium aromaticum*

***TRIGONELLA FOEUM-GRACEUM*:**

Family: Fabaceae

Common Name: Methi, Fenugreeek

Chemical Constituents: Alkaloids such as Trimethylamine, neurin, choline, trigoneline, gentinanine, carpine and betain are present. Amino acids such as isoleucine, histidine, lysine are present.

Biological Source: Consist of seeds and leaves of *Trigonella foeum-graceum*.

Biological Role: It has an anti-inflammatory, analgesic, febrifuge and galactogogue properties.

Uses:

Fenugreek is a well-known herb in the Ayurvedic system of medicine which acts a natural anti-oxidant and strengthens immune system. It is not only used as an herb (dried or fresh leaves), spice (seeds), vegetable (fresh leaves) but also as a condiment in artificial flavoring of maple syrup or in the production of steroids.

Fenugreek is known to have hypoglycemic, and hypocholesterolaemic, effects, Anti-inflammatory effects.

Immunomodulatory activity of aqueous extract of Trigonella foenum graecum L., a widely used medicinal and dietary herb, was evaluated in male Swiss albino mice. Showed a stimulatory effect on immune functions in mice. As it is used for a variety of medicinal purposes.

Its immune stimulatory effect, as reported in this study, strengthens the rationale of its use in several Ayurvedic and Unani drugs. [53]

Fig 16.: The Leaves and seeds of *Trigonella foenum-graceum*

Nutraceuticals and Herbal Extracts

Vitamins.

A daily intake of 20-50 μg of vitamin D was recently recommended for obese individuals, healthcare workers and smokers in order to enhance their resistance to infection.

Dietary minerals

Selenium

The importance of selenium for optimal immune function.

Zinc

Elderly individuals are often deficient in zinc, which is essential for immune function.

Iron

The strict regulation of serum iron concentration could thus provide favourable clinical outcomes for patients.

N-acetyl-cysteine (NAC)

NAC, which is derived from the naturally occurring amino acid, cysteine, is most commonly prescribed to patients suffering from various respiratory complications.

Probiotics

Nutritional supplementation with probiotics has been reported to be beneficial for patients suffering from respiratory tract infections.

Omega-3 fatty acids

omega-3 fatty acids have proven to be effective in reducing airway inflammation and bronchoconstriction, have also exhibited efficacy against viral infections, their potential for use against disease warrants further investigation.[51]

OTHER WAYS TO BOOST THE IMMUNE SYSTEM:

- Don't smoke.
- Eat a diet high in fruits and vegetables.
- Exercise regularly.
- Maintain a healthy weight.

- If you drink alcohol, drink only in moderation.
- Get adequate sleep.
- Take steps to avoid infection, such as washing your hands frequently and cooking meats thoroughly.
- Try to minimize stress.

Exercise:

Regular exercise is one of the pillars of healthy living. It improves cardiovascular health, lowers blood pressure, helps control body weight, and protects against a variety of diseases.[47] But does it help to boost your immune system naturally and keep it healthy? Just like a healthy diet, exercise can contribute to general good health and therefore to a healthy immune system.

Don't Compromise on Sleep:

Good snooze time for 7 to 8 h is the best way to help your body build immunity; lesser sleep will leave you tired and impair your brain activity. The lack of sleep will prevent the body from resting and this will impair other bodily functions that will have a direct impact on your immunity. Lack of sleep adversely affects the action of the flu vaccine.

Stay hydrated:

Drink up to 8 to 10 glasses of water every day, to stay hydrated. Hydration will help flush out the toxins from the body and lower the chances of flu. Other alternatives include juices made of citrus fruits and coconut water, to beat the heat.

Improve your diet:

The food you eat plays a key aspect in determining your overall health and immunity. Eat low carb diets, as this will help control high blood sugar and pressure. A low carb diet will help slow down diabetes and focus on a protein-rich diet to keep you in good shape. And regularly consume vegetables and fruits rich in Beta carotene, Ascorbic acid and other essential vitamins. Certain foods like mushrooms, tomato, bell pepper and green vegetables like broccoli, spinach are also good options to build resilience in the body against infections.

CONCLUSION:

Traditional medicine has been a rich resource for discovering new lead molecules for modern drug discovery. Plants are thought to have activated terpene-based host defenses during evolution, which has also shown a host of effective therapeutic compounds against common human diseases. Therefore, natural products derived from medicinal plants are potential candidates for immune enhancement therapy. In summary, eating all of the above foods can maintain a strong immune defense and achieve a healthy weight. At the same time, take appropriate multivitamins and mineral supplements, exercise at least 30 minutes each time, 4 times a week, and get 7-8 hours of sleep per night. A good night's sleep detoxifies the body and burns excess fat. To help or boost immunity, various herbs play an important role in promoting good bacteria in the body. Various vitamins such as C, D, and E are being researched to provide important aspects of boosting immunity. Herbs, such as *Withania somnifera, Tinospora cordifolia, Panax ginseng, Emblica officinalis, Zingiber officinale, Curcuma longa, Allium sativum, Aloe barbadensis, Azadirachta indica, Ocimum tenuiflorum, Echinacea perpurea* etc.While other vegetables are rich in vitamin C and are good for immunity. Proper nutrition and hydration improve health and immunity, they are not magic bullets. People living with chronic illnesses who have suspected may need support with their mental health and diet to ensure they keep in good health. Future aspects of this account for more research which is needed significantly on physical behaviors or exercises and their role in immunity-related issues thus preventing COVID-19.

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