



FABRICATIONS OF ANTIMICROBIAL AND ANTI INFECTIVE HERBAL DRINK: NATURAL REMEDY AS AN IMMUNITY BOOSTING TONIC

Arjun Pal*, Shashi Verma, Deepali Gupta

Department of Pharmacy, Shri Ram Murti Smarak College of Engineering and Technology, Bareilly, Uttar Pradesh, India.

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Corresponding Author:

* Arjun Pal

Email: kamalpal032@gmail.com

Mob. No.: +91-8650429917

† Shri Ram Murti Smarak
College of Engineering and
Technology (Pharmacy),
Bareilly-243202, (U.P.), India.

ABSTRACT

Herbal products have gained substantial curiosity among the pharmaceutical companies and consumers due to the negligible side effects associated with them. The bioflavonoids present in these products are the key group of actors in modulating their effects. Several therapeutic effects have been recognized to the bioflavonoids present in green tea and turmeric. Antimicrobial activity is one among the spectrum of activities they exhibit. Curcumin and catechins, the principle components of turmeric and green tea respectively have virucidal and virustatic actions. An antimicrobial composition consisting of extracts from green tea and turmeric have shown to be highly potent against various microbes, especially viruses. There are a number of herbal remedies which are constantly used as folk medicine in various tribal communities. Some of the most common herbal materials are there like Tulsi (*Ocimum sanctum*), Cinnamon (*Cinnamomum cassia*), Black cohosh (*Cimicifuga racemosa*), Turmeric (*Curcuma longa*), Black pepper (*Piper nigrum*), Thyme (*Thymus vulgaris*), Ginger (*Zingiber officinale*), Ashawgandha (*Withania somnifera*), Neem (*Azadirachta indica*), Garlic (*Allium sativum*), Onion (*Allium cepa*), Clove (*Syzygium aromaticum*) etc. The prepared herbal mixture contains some major ingredients ie: garlic, lemon, Honey, ginger and turmeric and there were variety of scientific evidences available which proved that the antioxidant, antimicrobial and anti infective property, promotes liver, uterus, intestines health. So it can be concluded that, these super drink contain a variety of properties which may help in boosting the immunity as well as promotes our health. Ginger also provides relief from arthritis. All the three ingredients are easily available, beneficial against bad food habits and the mixture is a better alternative to tea.

Keywords: Antioxidant, antimicrobial and anti infective property, immunity boosters, ginger, turmeric, herbal source.

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INTRODUCTION

Traditional medicine used for a long time various medicinal plants for infectious diseases healing. Ancient healers often combine medicinal plants with mysterious incantations, recipes being inherited together with the secrets of their employment. On traditional healing practices, the knowledge were orally communicated along with sophisticated protocols about harvesting plants, methods of preparation, applications, dosage, special diets and associations with other secret stories about the nature of illness. Analyzing the evolution of antibiotic resistance has proven challenging due to the countless of factors involved—the genetic adaptation of microorganisms depends not only on exposure to antibiotics. Nowadays, we often find ourselves in a deadlock in choosing effective anti-infective treatment for nosocomial infections [1].

Across the world, traditional medicine (TM) is either the mainstay of health care delivery or serves as a complement to it. In some countries, traditional medicine or non-conventional medicine may be termed complementary or alternative medicine (CAM). A recent report by the World Health Organization (WHO) clearly sets out the course for traditional, complementary and alternative medicine (TCAM) over the next decade [2]. Oral diseases are major health problems with dental caries and periodontal diseases among the most important preventable global infectious diseases. Oral health influences the general quality of life and poor oral health is linked to chronic conditions and systemic diseases. The association between oral diseases and the oral microbiota is well established. The development of dental caries involves acidogenic and aciduric Gram-positive bacteria (*mutans streptococci, lactobacilli and actinomyces*). Periodontal diseases have

been linked to anaerobic Gram-negative bacteria (*Porphyromonas gingivalis*, *Actinobacillus*, *Prevotella* and *Fusobacterium*). Given the incidence of oral disease, increased resistance by bacteria to antibiotics, adverse effects of some antibacterial agents currently used in dentistry and financial considerations in developing countries, there is a need for alternative prevention and treatment options that are safe, effective and economical. While several agents are commercially available, these chemicals can alter oral microbiota and have undesirable side-effects such as vomiting, diarrhea and tooth staining. Hence, the search for alternative products continues and natural phytochemicals isolated from plants used as traditional medicines are considered as good alternatives. In this review, plant extracts or phytochemicals that inhibit the growth of oral pathogens, reduce the development of biofilms and dental plaque, influence the adhesion of bacteria to surfaces and reduce the symptoms of oral diseases will be discussed further [3].

Herbal tea is basically an herbal mixture made from leaves, seeds or roots of various plants. There is several "tisanes" (i.e.) herbal tea that has been used for their medicinal properties. Likewise, a research formulation is done on not so common ingredients including corn silk and stevia (along with lemon and cardamom) and a highly effective herbal tea is prepared in the form of tea bags. This tea not only start a good day with a soothing effect but also has wide range of pharmacological actions that include anti-diabetic, anti-hypertensive, anti-depressing, anti-inflammatory, prevent urinary tract infections and many more. Also, in order to prevent mistakes in traditional methods, to maintain a microbiologically safe product while allowing them to be consumed in every season, to find out value added material usage in beverage sector, herbal extracts are produced like the corn silk herbal tea. The corn silk herbal tea is rich source of natural bioactive compounds like carotenoids, flavonoids, terpenoids, saponins, phenolic acids and many more [4].

Herbal products have gained considerable interest among the pharmaceutical companies and consumers due to the minimal side effects associated with them. The bioflavonoids present in these products are the key players in modulating their effects. Several therapeutic effects have been attributed to the bioflavonoids present in green tea and turmeric. Antimicrobial activity is one among the spectrum of activities they exhibit. Curcumin and catechins, the principle components of turmeric and green tea respectively have virucidal and virustatic actions. An antimicrobial composition consisting of extracts from green tea and turmeric have shown to be highly potent against various microbes, especially viruses. In the present review, it has been discussed on the patents and the antiviral effects of curcumin and catechins. The antimalarial effect of curcumin has also been discussed [5,6].

It is well known that multiple drug resistance has developed due to the indiscriminate use of commercially available antibiotics [5-9]. Furthermore, these anti-infective drugs have, on occasions, been associated with adverse effects on patients, including stroke, heart attacks, heart rate irregularities, liver toxicities, seizures, psychoses, allergic reactions, immune suppression and death [10,11]. Because of these factors, there is a constant need for the development of new antimicrobial compounds that are therapeutically more effective with

minimal toxicity. Many studies have shown that herbal preparations may offer a potential source of alternative compounds for the treatment of a wide range of infectious diseases [7,12-14].

Herbs have been used for many years as food additives and traditional medicine against a number of infectious agents. The most commonly used herbs that possess antimicrobial properties are garlic, black cumin, cloves, cinnamon, thyme, mustard etc. Herbs are potent antimicrobials and can replace synthetic preservatives like Butylated Hydroxyanisole (BHA) and Butylated Hydroxytoluene (BHT) used in the food industry [13-15]. According to WHO, herbs can be the best source to obtain a variety of drugs [16]. The herbs should be studied in a better way to understand their properties, safety, and efficiency [14, 17-19].

A number of pathogenic bacteria have developed resistance to antibiotics that results into multi-drug resistance among bacteria [20]. Several studies have reported on potent antimicrobial properties of essential oils [21]. It is observed that there are complex interactions between different functional groups of herbal drugs like phenols, aldehydes, ketones, alcohols etc. [22]. It is a fact that the herbs containing cinnamaldehyde, citral, carvacrol, eugenol or thymol (aldehyde or phenol as functional groups) possess the higher antibacterial activity in comparison to other herbs/essential plant oils [23-25]. Lambert et al. [26] assessed minimum inhibitory concentration (MIC) of oregano essential oil (OEO) and two of its principal components, i.e., thymol and carvacrol, against *Pseudomonas aeruginosa* and *Staphylococcus aureus*. They observed an additive antimicrobial effect of carvacrol and thymol and thus the overall inhibition by OEO was much more than any of the two components used alone. Inhibition due to OEO is due to damage of membrane integrity, further affecting pH, homeostasis and equilibrium of inorganic ions in the cytoplasm. Recently Bhardwaj and coworkers and others [16, 27, 28] reported a synergistic effect of herbs with antibiotics to kill microbes.

The main goal of this work was to prepare an herbal tonic or drink with some selective and suitable herbal components that may effectively reduce the infections in the different part of the body or may act as an immunity boosting effects.

Herbs and their therapeutic effects [29-32]

Herbal drugs have been used for several medication purposes throughout the world due to presence of important properties like antimicrobial, immune-modulatory, good health, therapeutic and healing properties that ensure prevention and cure of animal and human diseases. In last few years, the requirement of herbal drugs has been increased due to their efficacy and potency in the treatment of various bacterial infections. Due to the adaptation of civilized life over rural life, people have started to live along with companion animals which led to increasing in infectious and non-infectious agents, creating the problem of zoonotic pathogens. There are number of herbal drugs which have shown adverse effects when used on experimental animals. Akande investigated hepatological, histological and renal function tests of Sprague-Dawley albino rats, to determine the possible effects on rat kidney and liver on oral exposure to Agyanom mixture, Bolex bitters and Remedias mixture.

Histological features of mild to severe tubular necrosis were evident in the kidney tissues of all the experimental groups compared to the control, unlike in the liver tissues [29].

Many hundreds of plant extracts have been tested for in vitro antibacterial activity. This review is a critical evaluation of controlled clinical trials of herbal medicines with antibacterial activity. Four electronic databases were searched for controlled clinical trials of antibacterial herbal medicines. Data were extracted and validated in a standardized fashion, according to predefined criteria, by two independent reviewers. Seven clinical trials met our inclusion criteria. Four of these studies were randomized. Three trials of garlic and cinnamon treatments for *Helicobacter pylori* infections reported no significant effect. Bacterial infections of skin were treated in four trials. Positive results were reported for an ointment containing tea leaf extract in impetigo contagiosa infections. Two trials of tea tree oil preparations used for acne and methicillin-resistant *Staphylococcus aureus*, and one trial of *Ocimum gratissimum* oil for acne, reported results equivalent to conventional treatments. Few controlled clinical trials have been published and most are methodologically weak. The clinical efficacy of none of the herbal medicines has so far been demonstrated beyond doubt. This area seems to merit further study through rigorous clinical trials. A black tea leaf extract, presumed to derive its antibacterial effect from tannins and catechins, demonstrated results equivalent to antibiotic treatments for curing impetigo contagiosa. This simple and inexpensive alternative to conventional treatment may be worthy of further rigorous investigation [30].

The word antibiotic emerges from antibiosis mean against life; it is also because of the fact that antibiotics affect our life. Antimicrobial drug use is rampant not only in therapeutics but also in livestock production leading to continuous contamination of our environment. Indiscriminate use of antibiotics has led to emergence and spread of antimicrobial drug resistance in microbes including pathogens leading to an imbalance in the microbiota of our system and the environment. Ominous distribution of antimicrobial drug resistance in microbes, and still then the use of antimicrobials cause several social, economic and psychological complications. At present the challenges are several with us, viz.: 1) The antibiotics, once considered miracle drugs, are now not miraculous and there is hardly any antibiotic available to treat Multiple Drug Resistant (MDR), Extended Drug Resistant (XDR), and Total Drug Resistant (TDR) microbes with a promise to cure; 2) There are no alternatives to antibiotics at hand or insight at present; 3) There are no policies to regulate antimicrobial drug use in most of the developing world if any they have not been implemented; 4) Antimicrobial drug-resistant strains are everywhere even in environment naive to human invasion; 5) Those are susceptible may get MDR strains from their clinicians; and 6) Clinicians usually ignore the physiological and psychological effects of antimicrobials while recommending the therapy and are least bothered for the side effects of antimicrobial chemotherapy. In treatment of number of infections, two or more drugs are however, the therapeutic efficacy of the combination depend interactions of drugs combined.

Synergistic combinations help to reduce emergence of resistant mutants, toxicity, exhibit more antimicrobial activity and more effective against mixed infections. However, only little is understood about the combination of herbal antimicrobials and antibiotics. Herein the existing information on the synergy between antibiotics and herbal antimicrobials is reviewed [31,32].

Influenza is a widespread disease caused by infection with the influenza virus. Vaccination is considered to be the main countermeasure against influenza. A split vaccine is widely used to avoid severe adverse events, and it induces strong humoral immunity. However, the split vaccine alone cannot elicit mucosal immunity, including IgA production, and its preventative effects are limited. Here, we show that the green tea cultivar 'Benifuuki' extract enhanced the effect of a split vaccine on mucosal immunity. The frequency of IgA⁺ cells was increased in lung and Peyer's patch that received Benifuuki diet. Secretion of hemagglutinin-specific mucosal IgA, which is closely linked to the prevention of viral infection, was significantly increased in the bronchoalveolar lavage fluid of split vaccine-immunized BALB/c mice that were administered green tea Benifuuki extract. Our findings suggest that Benifuuki intake enhanced the effects of the split vaccine on mucosal immunity. The uterus is pretty well protected from infection travelling through the vagina both by the fluids in the vagina which are designed to deal with infective material being introduced through intercourse or otherwise. The cervix at the top end of the vagina is a further barrier and this is designed also to block the path of any pathogens thereby protecting the uterus from infection. In past ages deaths occurred through infections contracted during birthing when the cervix is fully dilated and unsanitary birthing practices were common. In the modern age the primary cause for uterine infection has been the use of contraceptive devices inserted through the cervix, which had the potential to introduce infective materials during insertion and also to open the cervix slightly and reduce its effectiveness in blocking infection travelling from the vagina into the uterus. There were some very infamous inter uterine devices which caused a direct toxic shock to the immune system and untold problems due to their being made of copper and others due to their shape which promoted a great deal of inflammation and therefore potential for infection. Recently inter uterine devices are much less common and uterine infections are less common than thirty odd years ago. It make up specific combinations of anti infective, immunity boosting and blood cleansing herbs which are particularly well suited to deal with Uterine Infection and the ones in my standard mix are; Buchu, Uva Ursi, Garlic, Echinacea, Rosehips, Yarrow and Golden Seal with the Bach Flower Remedies Crab Apple, Olive and Rescue Remedy. Drinking 4 or 5 cups of Rosehips daily (hot or cold) makes an immediate difference to your battle against any infection. You may also add fresh lemon juice as well to the Rosehips Tea to provide an astringent tonic to the mucosal lining of the Uterus and provide extra Vitamin C besides. Maintaining a course of three doses daily will quickly support your body's efforts to clear an infection from the Uterus [33].

Here are some safe and effective herbs that you can use [34-56].

GREEN TEA



Figure 1: Green tea

Green teas have beneficial effects on human health including cardioprotective, anticarcinogenic, antibacterial, antiviral and antifungal activity. The precise antimicrobial spectrum of tea is difficult to be defined due to variation in the methods of testing that have been used. Antibacterial effects of tea have been demonstrated against a number of microorganisms including *Staphylococcus aureus*, *Vibrio cholerae*, *Escherichia coli*, *Shigella spp.*, *Salmonella spp.*, *Bacillus spp.*, *Klebsiella spp.* and *Pseudomonas aeruginosa*. Teas and tea ingredients seem to have both bactericidal and bacteriostatic actions. In addition, tea catechins have been shown to modify the antibiotic sensitivity of bacteria and to alter the expression of factors that determine bacterial virulence. Antiviral effects of green tea have been demonstrated against the influenza virus, as well as against the Herpes simplex virus, tobacco mosaic virus, enterovirus, rotavirus, Epstein Barr virus, HIV virus. Yet, green tea catechins have been shown to have antiviral activities against HIV infection. Antifungal effects of tea have been reported against *Candida albicans*, *Trichophyton mentagrophytes*, and *Trichophyton rubrum*. The present paper describes recent patents on antimicrobial effect of teas and tea ingredients.

SAGE



Figure 2: the leaves of sage

The aromatic traditional herb of the mint family has long been used to treat viral infection. The leaves and stem of this herb contain a compound called saffinonolide, which has antiviral properties. The best way to consume this herb is by drinking sage tea. It has soothing and healing properties.

BASIL



Figure 3: The leaves of basil

Basil has antiviral and anti-inflammatory properties that can help fight several viral infections. A study revealed that basil contains compounds like apigenin and ursolic acid, which is effective on herpes, hepatitis B, and enterovirus.

FENNEL SEEDS



Figure 4: Fennel seeds

The main compound of fennel seeds is trans-anethole, which is found to be quiet effective against herpes viruses. The small seeds also boost your immunity and decrease inflammation in the body.

OREGANO



Figure 5: The leaves of oregano

This is another important herb of the mint family with powerful antiviral properties. The plant contains compounds called carvacrol that has proven to be effective on viruses. Oregano also contains antibacterial and antifungal properties.

ECHINACEA



Figure 6: The plants of Echinacea

First used by Native Americans as treatment for snakebites, colic, wounds and infections; Echinacea has been used for a variety of infections for hundreds of years. Introduced into standard medical practice in the United States in the 1800s, Echinacea was a popular anti-infective medicine. That was until the development of antibiotics, where its use fell out of favour. Echinacea however is becoming popular once again as research confirms that it is effective for treating many strains of microorganisms, as well as being an anti-inflammatory agent. Functioning primarily as an immune modulator, Echinacea modulates immune function against bacterial, fungal, and viral infections. Research suggests it is particularly effective against upper respiratory tract infections, sinusitis, the common cold, influenza-like viral infections, staphylococcus, streptococcal, candida and herpes viruses. Echinacea works best at the first sign of infection, helping to reduce symptoms and the duration of the infection. If you are susceptible to any of the above infections, Echinacea can be used as a preventative treatment, to reduce the development of infection before it starts. As Echinacea regulates the immune system, it is important to note that patients being treated with auto-immune conditions should avoid it unless they have been told otherwise by a health professional.

MANUKA



Figure 7: The plants of Manuka

In New Zealand we have all heard of the benefits of Manuka Honey, but do you know what makes the honey so special? It is the Native Manuka. Bees pollinate the Manuka bush and the product provides stronger antibiotic properties than any other types of honey. Traditionally

Manuka was used to reduce fever, as a sedative, pain killer and to aid urinary conditions. Antimicrobial and anti-inflammatory in nature, Manuka is an effective treatment against bacterial, fungal and helminth infections, fevers and colds. Manuka may be effective against the growth of streptococcal bacteria that causes a sore throat, aid asthma, bronchitis and sinus problems and clear infections by boosting the immune system. Manuka's anti-ulcer and astringent properties mean that it is also a great topical preparation for healing wounds, or fungal infections.

THYME



Figure 8: The plants of Thyme

Used as an aromatic cooking herb for centuries, Thyme's use as an antimicrobial, dates back to the 17th century where herbalists used Thyme to treat whooping cough and shortness of breath. Traditional western medical herbalists still use Thyme today for conditions of the respiratory tract. Due to its antibacterial, antiviral and anthelmintic properties, largely attributed to the essential oil, Thyme has been classified as a natural antibiotic. Thyme is an effective treatment for both dry and chesty coughs. With its relaxing effect on the bronchial tubes, Thyme helps to reduce spastic bronchitis and asthma; where the expectorant action helps to thin and expel phlegm. Thyme may also be gargled to help reduce the pain and inflammation associated with tonsillitis and laryngitis. Used topically when diluted, it may also be used for skin infections or minor wounds. Great when used as an inhalant via steam in hot water, the essential oil is potent, 1-2 drops may be sufficient.

OLIVE LEAF



Figure 9: The plants of Olive Leaf

Olive has historically been valued for its fruit and oil, however it is the leaves that are used medicinally. Credited with providing resistance against insects and damage, olive leaf provides broad spectrum anti-bacterial activity, and has anti-viral, anti-fungal and anti-inflammatory properties. It is the broad protection olive leaf provides, that boosts our natural immune response, helping it also to fight against candida and staphylococcus infections. It is also effective for the prevention or treatment of respiratory tract infections, as a natural bronchodilator and general immune tonic.

ASTRALAGUS

First recorded in the Materia Medica around 2000 years ago, astragalus was used as an antioxidant to stimulate immune function and for the treatment of viral infections. Contemporary research has confirmed what was always known, that astragalus helps to enhance the immune system, and as an antioxidant, protects cells against damage. Astragalus protects and provides support to the immune system, and can aid the prevention and treatment of viral infections as well as reducing the duration of common colds and flus.

Popular in Traditional Chinese Medicine, Astragalus is used for invigorating vital energy, and to strengthen and tonify Qi. Astragalus also functions as an adaptogen, helping to protect the body against physical, mental and emotional stressors, which may be why it is commonly used to enhance recuperation and reduce fatigue. Astragalus is often used for long term immune conditions and ongoing poor health.



Figure 10: The plants of Astragalus

The body has an innate ability to heal itself when nurtured correctly. As natural medicine gains popularity and we learn about the harm that long term antibiotic use can cause, many people are turning to herbs to aid their health and wellbeing. Certain herbs contain potent substances that act medicinally and not only help support the immune system, but other body systems simultaneously.

Herbal medicine can work well alongside orthodox medicine however it is crucial to know that interactions may occur, so always talk to your health professional before use. With winter upon us, this is the time to put your health and wellbeing first. Maintain your bodies with natural antibiotic herbs that can help support your immune system against infections, should they occur.

TURMERIC



Figure 11: Turmeric powder

Curcuma longa (CL) or turmeric is one of the alternative herbs which confer medicinal properties. This review aims to summarize the effects of CL and its active constituents on blood pressure derived from preclinical and clinical published articles. Studies documented that CL and its active constituents could reduce blood pressure. These were achieved by antioxidant, anti-inflammatory activity, calcium ion concentration interference, α_2 -adrenergic receptor activation, and renin-angiotensin system inhibition. There is a potential role of CL in the management of hypertension. However, limited studies of CL have been conducted on human. Thus, more well-planned studies should be carried out to ascertain its effectiveness [39].

Curcuma longa (CL), or commonly known as turmeric, originates from southeast India and is extensively cultivated in tropical areas of South Asia. It is a herbaceous perennial plant in the ginger family, known as Zingiberaceae. Its aromatic tuberous rhizome has been widely used in medicinal, culinary and dyeing purposes [40]. Hypotensive and vasorelaxant activities of the methanolic extract of CL (MECL) were studied in male Wistar normotensive rats [41].

The search for novel anti-infectives is one of the most important challenges in natural product research, as diseases caused by bacteria, viruses, and fungi are influencing the human society all over the world. Natural compounds are a continuing source of novel anti-infectives. Accordingly, curcumin, has been used for centuries in Asian traditional medicine to treat various disorders. Numerous studies have shown that curcumin possesses a wide spectrum of biological and pharmacological properties, acting, for example, as anti-inflammatory, anti-angiogenic and anti-neoplastic, while no toxicity is associated with the compound. Recently, curcumin's antiviral and antibacterial activity was investigated, and it was shown to act against various important human pathogens like the influenza virus, hepatitis C virus, HIV and strains of Staphylococcus, Streptococcus, and Pseudomonas. Despite the potency, curcumin has not yet been approved as a therapeutic antiviral agent. This review summarizes the current knowledge and future perspectives of the antiviral, antibacterial, and antifungal effects of curcumin.

Bacterial infections can cause a number of human diseases, including relatively harmless self-limiting ailments and potentially lethal medical conditions if left untreated. Potent antibiotics are available against many bacteria. Nevertheless, due to the extensive use of the drugs, antibiotic resistance is on the rise, making formerly easy to eliminate pathogens untreatable. As for other infectious agents globalization has contributed to the expansion of (resistant) strains. In response to this, in 2017 the WHO published a list of 12 bacterial strains against which new drugs are critically needed. Among them are strains of Staphylococcus, Streptococcus, Helicobacter and Pseudomonas, which all have been shown to be inhibited by curcumin. In the following chapter, we will summarize today's research status of curcumin's activity against Gram-positive and Gram-negative bacteria [42]

GARLIC



Figure 12: The Garlic bulb

Garlic is a superfood and is used for preparing medicines for various health conditions. Studies suggest that garlic can be effective against influenza A and B, HIV, HSV-1, viral pneumonia, and rhinovirus [39].

Garlic (*Allium sativum*) has been used as a spice, food, and medicine for over 5,000 years, and is one of the earliest documented herbs utilized for the maintenance of health and treatment of disease. [43]. In some of the oldest texts on medicine, eg, the Egyptian Ebers papyrus dating around 1500 BC and the sacred books of India, "the Vedas" (1200–200 BCE), garlic was recommended for many medicinal applications, including circulatory disorders [44]. In ancient Greece, garlic was used as a diuretic, as recorded by Hippocrates, the father of modern medicine [45].

The bulb of garlic is commonly used for a variety of ailments. Garlic is used for hypertension, hyperlipidemia, coronary heart disease, age-related vascular changes and atherosclerosis, earaches, chronic fatigue syndrome (CFS), and menstrual disorders. Garlic is regarded as a potent platelet aggregation inhibitor. Many of the pharmacological effects of garlic are attributed to the allicin, ajoene, and other organo-sulfur constituents such as S-allyl-L-cysteine. Fresh garlic contains approximately 1% alliin [46]. One milligram of alliin is converted to 0.458 mg allicin which is regarded as the major active compound in garlic. Further conversion yields ajoene. The amount of allicin in garlic preparations is dependent upon the method of preparation. Taking low doses of garlic powder orally, 300 mg per day seems to slow the age-related aortic elasticity decrease. Higher doses of 900 mg per day seem

to slow development of atherosclerosis in both aortic and femoral arteries when used over a four-year period [47].

GINGER



Figure 13: The ginger

Ginger has impressive antiviral, antibacterial and anti-inflammatory properties. Studies suggest that this herb is effective in avian influenza, RSV, and feline calicivirus (FCV). Ginger contains compound such as gingerols and zingerone that helps to prevent the growth of the virus.

HONEY



Figure 14: The honey

Honey is a natural sweetener, contains mainly monosaccharides (up to 80%), disaccharides (3–5%), water (17–20%) and a wide range of minor constituents such as vitamins, minerals, proteins, amino acids, enzymes and phytochemicals [48–49]. Its composition varies depending on botanical and geographical origin, as well as environmental conditions. The sugar components determine the energy value and its physicochemical properties which are critical for technological functions of honey [49–51]. Phytochemicals, mainly phenolic acids and flavonoids, are present in smaller quantities but they strongly determine the unique flavour, appearance and bioactivities of honey [49]. Phenolic compounds are known to offer complementary and overlapping modes of action through antioxidant activity, antibacterial and antiviral activities, modulating detoxification enzymes, stimulating the immune system, reducing platelet aggregation, modulating cholesterol synthesis and reducing blood pressure among the others [52–53]. Thus, their presence in the composition attributes to the relevant health benefits of honey [54]. Numerous studies have examined the phenolic profiles in honey and reported a high correlation of phenolic content with antioxidant capacity of honey [55, 56].

MATERIALS AND METHODS

MATERIALS REQUIRED:

All the materials are enlisted in table 1, were collected from local vendors of Bareilly and Ginger and turmeric was cleaned with the help of water and dried at sunlight.

Table 1: contents in herbal mixture

Ingredients	Quantity taken for 50 ml
Green Tea leaf	5gm
Turmeric powder	2gm
Fennel seeds extract	2ml
Garlic extract	1ml
Ginger extract	2ml
Tulsi leaves extract	2ml
Lemon extract	3ml
Clove powder	0.5 gm
Black pepper powder	0.5 gm
Elaichi powder	0.5 gm
Honey	10ml
Water	Volume made upto 50 ml

METHODOLOGY:

First of all fresh and pure materials was collected then after cleaning and drying, the extraction process was carried out after grinding it with the help of hydro distillation method [57].

The extraction was done in a distillation apparatus. The fresh ginger sample was grinded into mash using a manual blender. The 500ml round bottom flask of the distillation apparatus was filled with about 250ml water, then 35 grams of the grinded fresh ginger was added into the flask. The quick fit distillation apparatus was set on a heating mantle. The temperature was set to 90°C. Heat the mixture for about 30 minutes to get the extract materials.

Preparation of herbal mixture

30 ml of water was taken in a beaker and about 2g of turmeric powder and 2gm green tea leaf was added in it. The mixture was heated till half the water evaporated. It was cooled and filtered. After that all the extracted constituents mentioned in table 1 was added and mixed into initial solution. Finally elaichi, clove and black pepper powder was added separately for the fragrance, flavor and taste. It was kept for cooling at room temperature for 30 minutes and then 10ml of honey was added in it. The volume of herbal mixture was finally made up to 50 ml with help of water (figure 15).

The herbal mixture contains all the ingredients with antioxidant property so it may acts as a powerful antimicrobial and anti infective booster that improves our health.



Figure 15: Prepared of herbal mixture

CONCLUSION

The ancient herbal therapeutic schemes differ from one geographic region to another, influenced directly by the flora existing in those regions. The folklore is the foundation of medicinal herbs, and the references to relevant bibliographies are rare. In countries with a strong tradition of plant healing, people are more confident in using plant products. Even so, the current trend in antimicrobial resistance has convinced many research teams to orient their resources toward selecting and standardizing plant treatments beneficial to healing or preventing infectious diseases. Embryonic stem cells used in gemmotherapy are often multiple organotropic, the products recommended for infectious diseases are more immunomodulatory than genuine antimicrobial agents. Also, embryonic stem cells have different characteristics from adult plants. The positive outcomes of many plant-based products or plant-derived compounds in healing of infectious diseases justify the reconsideration of their therapeutic potential. There are more than 5000 different types of viruses that can cause serious diseases like the common cold, the flu, hepatitis, mononucleosis and HIV. A virus is a small infectious agent that replicates only inside a living cell and can infect all forms of life, including humans, animals, plants and microorganisms. A viral infection is mostly seasonal and is often treated with proper medication. However, there are some herbs, which have antiviral properties and can be used in moderation when you are under the weather.

The prepared herbal mixture contains some major ingredients ie: garlic, lemon, Honey, ginger and turmeric and there were variety of scientific evidences available which proved that the antioxidant, antimicrobial and anti infective property, promotes liver, uterus, intestines health. So it can be concluded that, these super drink contain a variety of properties which may help in boosting the immunity as well as promotes our health. Ginger also provides relief from arthritis. All the three ingredients are easily available, beneficial against bad food habits and the mixture is a better alternative to tea.

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