



Nutritional and Therapeutic Potentials of Herbal Tea

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(Received: 09 January 2024; Revised: 24 January 2024; Accepted: 16 February 2024; Published: 15 March 2024)

(Published by Research Trend)

ABSTRACT: Tea is a beverage that is consumed by people all over the world, second to water. Tea is described as an infusion made from dried leaves and buds of *Camellia sinensis*, which is an evergreen shrub where as an infusion created from plant parts other than *Camellia sinensis*, such as herbs, fruits, flowers, stems, roots are called herbal tea or herb tea. Actually, herbal teas are more appropriately called "tisanes," as they are blends of multiple herbs. Herbal tea has a long history of therapeutic use in Sri Lanka, Egypt, and Greece, but the earliest known oral history of the beverage is from China, dating to 2737 BC. Carotenoids, phenolic acids, flavonoids, alkaloids, polyacetylenes, saponins, and terpenoids are just a few of the naturally occurring bioactive components found in herbal teas and beverages. Empirical data indicates that these bioactive substances exhibit a wide range of biological properties, including antimicrobial, antioxidant, antiviral, antimutagenic, and anticarcinogenic properties. Additionally, it has been suggested that consuming a cup of herbal tea daily will lessen or perhaps completely eradicate chronic disorders. Thus, in the current environment, consuming herbal tea is a novel approach to maintain good health and immunity.

Keywords: herbal tea, nutritional value, therapeutic property, disease management.

INTRODUCTION

Tea is an inexpensive, safe, widely consumed, enjoyable, and socially acceptable beverage that hundreds of millions of people on all continents enjoy on a daily basis. Additionally, tea is a dietary source of biologically active substances that aid in the prevention of numerous illnesses (Trevisanato & Kim 2000). Flavonoids and phenolic acids, which are abundant in this common beverage, are the primary sources of phenolic chemicals that give tea infusions their overall antioxidant action (Kim *et al.*, 2011). Hence, tea is a part of the quickly growing category of "wellness beverages" (Byun and Han 2004). The composition of tea is also known to vary depending on the type, climate, horticulture techniques, leaf age and season, and technological advancements (Lin *et al.*, 2003). Due to increased public knowledge of the health advantages of tea intake, there has been a resurgence of interest in tea in recent years (Mckay and Blumberg 2002). Humans have been using herbal teas and beverages for generations to support their lives and livelihoods. These drinks are made from plants that have biological activity (Onaolapo and Onaolapo 2019). Even though non-fermented/aerated green tea, semi-fermented (oolong) tea and fermented black tea makes up the majority of tea produced worldwide, the processing has expanded to include the creation of specialty teas such as white tea, flavoured teas, organic teas, decaffeinated

teas, herbal teas, scented teas and numerous other blends (Karori *et al.*, 2007). Tisanes, or herbal teas, are prepared similarly to regular tea (*Camellia sinensis*). The method of brewing involves steeping (soaking) herbs in hot water for a predetermined amount of time until the water absorbs the bioactive compounds (Onaolapo and Onaolapo 2019). The contents of herbal teas vary greatly; they are primarily made of natural ingredients, mostly herbs, and offer a number of health benefits to people. Herbal tea plant species can provide fresh or dried roots, stems, leaves, fruits, flowers, seeds, bark, or entire plants as ingredients for their teas (Liu *et al.*, 2013). Following the Boston Tea Party in America on December 16, 1773, there was the first known case of widespread tisane drinking in the modern era. This historic incident occurred when many tones of tea were poured into the water (Dwyer *et al.*, 2013). Eastern nations have been employing herbal treatments to cure illnesses, infections, and diseases for millennia. Tea, or an infusion made from dried plant components steeped in boiling water, is a common way that people consume herbal treatments (Chan *et al.*, 2010). Herbal teas are widely consumed due to its aroma, anti-oxidant qualities, and medicinal uses (Naithani *et al.*, 2006).

TYPES OF HERBAL TEA

Tea's consumption has surged globally as a result of its verified health advantages, it is now an essential

component of contemporary life (Cooper *et al.*, 2005). There are numerous varieties of herbal teas, just as there are numerous varieties of actual tea. There are almost as many different herbal tea blends as there are tea connoisseurs, but these blends often contain a few basic ingredients. Herbs that are used to make popular Mediterranean beverages, such as chamomile, peppermint, ginger, Greek mountain tea, eucalyptus, linden, sage, mint, and dictamnus. Some of them are renowned for their delicious flavour and therapeutic qualities (Atoui *et al.*, 2005). There are many different ways to prepare chamomile, but the most common one is in herbal tea, which is drunk in excess of a million cups daily (Srivastava *et al.*, 2010) One of the most often consumed single ingredient herbal teas, or tisanes, is chamomile (*Matricaria recutita* L., *Chamomilla recutita* L., *Matricaria chamomilla*). These tisanes are made from dried chamomile flower heads (McKay & Blumberg 2006). According to Srivastava *et al.* (2010) chamomile is a herb that has been ingested for centuries and is derived from daisy blooms (*Matricaria* species), its essential oils are widely utilised in aromatherapy and cosmetic products. According to a study by Chang *et al.* (2016) it is primarily renowned for its relaxing properties and is regularly used as a sleep aid. Awad *et al.* (2009) stated that lemon balm tea offers health-promoting qualities and a mild, lemony flavour.

One of the most popular single-ingredient herbal teas, or tisanes, is peppermint (*Mentha piperita* L.). Traditional medical practices employ peppermint essential oil and tea made from the plant's leaves (Mckay and Blumberg 2006). An amalgam of spearmint and water mint, *Mentha piperita* is commonly used as peppermint. It's widely used as gum flavouring, toothpaste flavouring, and tea flavouring in Europe and North America (Knowlton, 2011). *Hibiscus sabdariffa* is frequently used in herbal tea blends, and the dried calyces of this plant are used to make popular drinks all over the world (Mckay, 2009). The vibrant blossoms of the hibiscus plant are used to make hibiscus tea, its colour is pink-red, and its flavour is tangy and refreshing. It tastes good either hot or cold (Majid *et al.*, 2019). According to Marmol *et al.* (2017) the fruit of the rose plant is used to make rose hip tea. The dried seeds of the rosehip plant are used to make medications. These plants' potential for medicinal application stems from their antioxidant properties, which are linked to or induced by their phytochemical makeup. *Rosa rugosa* and *Rosa canina* are the two primary varieties of rose hip seeds used to create tea. These roses are native to Europe, Asia, and North Africa, and are widely grown in the USA.

NUTRITIONAL PROPERTIES OF HERBAL TEA

Herbal teas and beverages are abundant in naturally occurring bioactive substances, including but not limited to carotenoids, phenolic acids, flavonoids, coumarins, alkaloids, polyacetylenes, saponins, and terpenoids (Chandrasekara & Shahidi 2018). According to Carnat *et al.* (2004) there were 340 mg/l of polyphenolic chemicals in the chamomile tea, with chamaemeloside (155 mg/l) being the most significant.

The tea contained only trace amounts of essential oil (7 mg/l). Additionally, the herb and its infusion include organic acids (fumaric, fumaric, malic, quinic, and oxalic acids) that have been shown to have antitumor and antioxidant properties without being harmful to the liver (Rafaela *et al.*, 2013). Several mineral elements were found in chamomile infusion, specifically calcium, potassium, magnesium, zinc, and cadmium (Chizzola *et al.*, 2008). Flavonoids found in lemon balm leaves include quercitrin (a derivative of quercetin), rannocitrin, luteolin and its derivatives (luteolin 7-o- β -d-glucuronopyranoside, luteolin 3'-o- β -d-glucuronopyranoside, apigenin 7-o- β -d-glucopyranoside, and luteolin 7-o- β -d-glucopyranoside-3'-o- β -d-glucuronopyranoside and the main constituents of terpenoids include tannins, ursolic acid, geranyl acetate, and neral were also present in lemon balm leaves (Moradkhani *et al.*, 2010). A study conducted by Ordaz *et al.* (2018) reported that apigenin, caffeic acid, rosmarinic acid, and phenolic type compounds were among the most prevalent bioactive substances found in the aqueous extracts of lemon balm. Compared to microgreen teas, adult lemon balm tea had higher levels of rosmarinic acid, total flavonoids, total phenolics, and antioxidant capacity. On the other hand, microgreen lemon balm teas have greater concentrations of minerals, such as copper, zinc, phosphorus, magnesium, sodium, potassium, and calcium (Newman *et al.*, 2023).

Rosmarinic acid and a number of flavonoids, principally eriocitrin, luteolin, and hesperidin, are among the phenolic components of the peppermint leaves (Mckay and Blumberg 2006). A study conducted by Gadaka *et al.* (2021) on the peppermint tea leaves' methanolic extracts phytochemical screening encompassed the presence of total phenolic compounds, alkaloids, flavonoids, glycosides, saponin, steroids, tannins, and terpenoids. Peppermint teas are also strong in luteolin and glycosides of apigenin (Kapp *et al.*, 2013). Chen *et al.* (1998) investigated Roselle tea's volatile component makeup. Four classes of compounds- fatty acid derivatives, sugar derivatives, phenolic derivatives, and terpenoids were identified and over 37 of them were given detailed descriptions. Additionally it is abundant in several nutritionally significant elements, such as calcium, iron, niacin, riboflavin, ascorbic acid, and carotene (Mahadevan *et al.*, 2009). According to Vagiri *et al.* (2017) the roselle's red calyces are rich in antioxidants, such as abdaretine, hibiscetine, and flavanoids which is used for tea preparation. Similar to green tea, rosehip (*Rosa canina* L. *Rosaceae*) is rich in antioxidants, flavonoids, polyphenolic compounds, and vitamins C, A, and E. It also includes vital minerals and may help prevent oxidation-related diseases (Tumbas *et al.*, 2012). According to Kazankaya *et al.* (2001) Vitamin C, vitamins A, P, K, B1 and B2, E and minerals including K, Ca, Na, Fe, Mg, and P, and folic acids are all abundant in rose hips. It is estimated that rose hip contains 129 distinct chemical components. A number of significant active ingredients are present in this fruit, including fatty oils, tannins, anthocyanin, phenolic

compounds, flavonoids, and organic and inorganic substances (Zahra *et al.*, 2018).

THERAPEUTIC PROPERTIES OF HERBAL TEA

Herbal teas and beverages contain bioactive compounds that have a wide range of biological effects, including antimutagenicity, anti-carcinogenicity, antiaging, antiviral, antibacterial, antiviral, anti-inflammatory, antiallergic, and vasodilatory action (Chandrasekara & Shahidi 2018). According to conventional wisdom, chamomile has antiseptic, antibacterial, disinfecting, bactericidal, fungicidal, and vermifuge properties. It has been utilised for ages as a medicinal herb with antibacterial, anti-inflammatory, moderate astringent, light sedative, and antispasmodic properties (Zhuxin *et al.*, 2007). Shoara *et al.* (2015) also state that antibacterial, anti-inflammatory, antimicrobial, antidepressant, antidiarrheal, angiogenesis, anticarcinogenic, hepatoprotective, antidiabetic, and liver-protecting properties are all present in chamomile tea or extract. There is evidence that chamomile is effective against both Gram-positive and Gram-negative bacteria (Kazemian *et al.*, 2018). A study by Chaves *et al.* (2020) examined the analgesic effects of a crude fraction of chamomile using formalin tests. The findings revealed that using a 30 mg/kg dose of the herb reduced nociception (by 96%) in comparison to the control (10 mL/kg of saline solution), which demonstrated analgesic property. Lemon balm has a mild, lemony flavour and is said to have health-promoting qualities (Awad *et al.*, 2009). There are antiviral properties in the aqueous extract of lemon balm leaves. It prevented HSV-1 (herpes simplex virus 1) from attaching to host cells and from penetrating cells in in vitro experiments (Astani *et al.*, 2014). According to Abdellatif *et al.* (2014) the growth of bacteria, yeasts, and fungi (*Fusarium oxysporum* spp., *Mucor ramannianus*) as well as Gram-positive (*Staphylococcus aureus*, *Bacillus subtilis*, *Listeria monocytogenes*) and Gram-negative (*Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella enterica*) bacteria were hindered by the essential oil of *Melissa officinalis* leaves.

Hibiscus rosa sinensis plants are used to cure a variety of illnesses because of its anti-oxidant, antimicrobial, antidiabetic, anti-ulcer, hepatoprotective, antifertility, antigenotoxic, and anti-inflammatory qualities (Khristi & Patel 2016). Ali *et al.* (2018) reported that by reducing collagen deposition in the heart following myocardial infarction and enhancing the expression of the collagen III gene, aqueous roselle extract has demonstrated anti-fibrotic action. The minimum inhibitory concentration (MIC) of hibiscus tea shown antibacterial action against strains of *Salmonella typhimurium*, *Pseudomonas aeruginosa*, *Escherichia coli*, and *Staphylococcus*, regardless of temperature (Paraiso *et al.*, 2021). The plant known by its colloquial name, "nana," peppermint is traditionally utilised in the global pharmaceutical and cosmetic industries as a flavouring ingredient as well as for its antiseptic, stimulant, and antibacterial properties (Mahboubi & Kazempour 2014). Tea with peppermint leaves has

powerful antioxidant, antiviral, anticancer, as well as antiallergic qualities (Dinizdo *et al.*, 2020). Rose hip extracts have shown promise as anti-inflammatory, anti-arthritic, analgesic, antidiabetic, cardioprotective, antibacterial, immunomodulatory, gastroprotective, and skin-improving agents (Patel & Seema 2013). Extensive research has indicated that rose hip possesses pharmacological properties such as anti-obesity, anti-cancer, hepatoprotective, nephroprotective, cardioprotective, antiaging, anti-H. pylori, neuroprotective, and antinociceptive effects.

HERBAL TEA USED FOR PREVENTION OF DISEASES

Li *et al.* (2013) report that an increasing number of people drink these infusions on a daily basis for health reasons. Chamomile tea is said to strengthen the immune system and aid in the battle against cold-related diseases, demonstrating its health-promoting properties (Srivastava & Gupta 2009). In the past, chamomile has been used to treat a variety of conditions, including rheumatic pain, hemorrhoids, menstrual disorders, ulcers, sleeplessness, inflammation, and hay fever (Srivastava *et al.*, 2010). One of chamomile's primary functions is as a versatile digestive aid. Additionally, it can be used to treat a variety of gastrointestinal disorders, including motion sickness, indigestion, anorexia, flatulence, nausea, vomiting, and diarrhea. In addition to being an herbal bitter that stimulates the liver, chamomile also has the ability to treat ulcers (Mann and Staba 1986). Lemon balm herbal tea has been shown to be effective for a variety of conditions, including bronchial problems, stomach issues, hypertension, nervous system abnormalities, and sleeplessness (Skotti *et al.*, 2014). Mexican traditional medicine makes extensive use of lemon balms (melisa or balm) dry leaves to cure a variety of conditions, including mental illness, gastrointestinal issues, liver and biliary ailments, central nervous system abnormalities, respiratory and cardiovascular issues, and various cancers (Shakeri *et al.*, 2016). Lemon balm is used widely in ophthalmology, gynaecology, cancer, gastroenterology, and cardiology. It is also used to treat neurological illnesses, obesity, and sleep disturbances (Katarzyna *et al.*, 2019).

The decoctions or infusions of Roselle offer important therapeutic alternatives against a wide range of degenerative diseases, including cancer, diabetes, hypertension, hyperlipidemia, hepatoprotection, nephroprotection, and many more (Arslan *et al.*, 2021). According to Guardiola & Mach (2014) Patients with type 2 diabetes and those who are prehypertensive or slightly hypertensive can benefit greatly from using H. sabdariffa extract on a regular basis. Hibiscus leaves and blossoms are used in India as a cough, emmenagogue, demulcent, menorrhagia, antifertility, diuretic, and menorrhagia therapy (Jadhav *et al.*, 2009). Daily intake of peppermint tea has been shown in a study by Connelly *et al.* (2014) to alleviate osteoarthritis, modify hormone levels, particularly testosterone, and reduce headaches and insomnia. It has

been demonstrated that luteolin, one of the polyphenolic components of peppermint, reduces lung tissue inflammation, the production of antibodies specific to *C. pneumoniae*, and the presence of Chlamydia (Tormakangas *et al.*, 2005). For irritable bowel syndrome, flatulence, indigestion, nausea, and vomiting, peppermint is used as a folk cure or alternative medical treatment (Grigolet & Grigolet 2005). In Iran, people drink rose hip tea and utilise it as traditional medicine for ailments like dropsy, constipation, gallstones, stomach disorders, and the common cold (Montazeri *et al.*, 2011). Specifically, there have been reports of beneficial effects on arthritis from rose hip powder and extract (Zahra *et al.*, 2018). Vitamin C deficiency and the flu can be avoided with rose hip tea. Additionally, it is used to address issues with the stomach, such as inflammation, ulcers, and acidity. However, it is also used to treat gout, kidney problems, excessive cholesterol, and weight reduction (Tseng *et al.*, 2005).

CONCLUSIONS

Herbal teas, a popular beverage among customers who are health-conscious, have grown in popularity in the globalisation period as people are becoming more aware of their health and wellbeing. They have also entered a newly burgeoning niche market with other well-known plant-based beverages including tea, coffee, and cocoa. Herbal drinks are also used by a rapidly expanding portion of the populace for various cosmetic goals, including weight loss and slimming. Typically, natural components of various morphological plant parts like leaves, stems, roots, fruits, buds, and flowers—are used to make herbal beverages. Natural bioactive substances such as carotenoids, phenolic acids, flavonoids, alkaloids, polyacetylenes, saponins, and terpenoids are abundant in herbal teas and beverages. Research demonstrates that these bioactive substances have a wide range of biological effects, including antimutagenic, anticarcinogenic, antiviral, anti-inflammatory, antiallergic, antithrombotic, and antiaging properties. Herbal teas are now an inherent component of cuisine in nations like China, India, and Sri Lanka. where the use of traditional medicines is commonplace. Herbal tea is becoming an essential component of the diets of people everywhere in order to promote optimal health and lower the risk of various illnesses, including cancer, dyslipidemia, hyperglycemia, and hypercholesterolemia. As the saying goes, "prevention is better than cure"- drinking a cup of herbal tea every day can help minimise or perhaps completely eradicate a wide range of health issues including chronic diseases.

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How to cite this article: Priya P. and Beela G.K. (2024). Nutritional and Therapeutic Potentials of Herbal Tea. *Biological Forum – An International Journal*, 16(3): 50-55.