



ISSN Print: 2664-6781
 ISSN Online: 2664-679X
 Impact Factor: RJIF 5.32
 IJACR 2022; 4(2): 232-234
www.chemistryjournals.net
 Received: 03-08-2022
 Accepted: 10-09-2022

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The processing and health benefits of herbal tea

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Abstract

Herbal tea is a popular beverage/drink that is made from a variety of plant parts. Herbal teas are drunk by people from many walks of life for a variety of reasons, including disease prevention, taste, and pleasure. Herbs, in addition to their antioxidant, anti-inflammatory, antibacterial, antiviral, and antiproliferative effects, serve an essential role as phenolic sources. These beverages contain a variety of herbs, spices, and fruits that are said to have health-promoting properties; however, some may contain toxic plant components that are harmful to one's health. Herbal tea is gaining popularity among consumers who believe it is natural, safe, and beneficial to one's health.

Keywords: Herbal tea, antioxidant, beverages

1. Introduction

Tea is one of the most extensively drank beverages on the planet today. Tea is a beverage made from the dried leaves and buds of the *Camellia sinensis* plant. It is widely consumed because of its appealing aroma, flavour, and several health benefits [1]. Tea is one of the most extensively drank beverages on the planet today. Tea is a beverage made from the dried leaves and buds of the *Camellia sinensis* plant. It is widely consumed because of its appealing aroma, flavour, and several health benefits.

Tea has traditionally been classified as black, green, oolong, or earl grey tea based on distinct processing processes [2]. A fourth type, known as 'herb tea,' has gained appeal among consumers in recent years.

Another popular sort of tea is herbal tea, which is brewed from a variety of ingredients such as spices, herbs, dried calyces, and dried fruits. Most herbal teas are made up of one major herbal ingredient or a combination of herbal ingredients that promise to deliver a specific benefit, such as rejuvenation or treatment of a specific ailment [16].

Many vegetable leaves, especially carrot (*Daucus carota*) leaves, are thrown away. Vitamin C, -carotene, fibres, and many minerals such as Na, P, K, Ca, Mg, Mn, Zn, and Fe are all abundant in carrot leaves [24]. Carrots are among the most popular and frequently consumed crops in the world, owing to their ease of cultivation and versatility in a variety of meals and cultural cuisines.

They have numerous medicinal and physiological benefits, not to mention a delicious flavour that makes them a popular vegetable in cultural cuisines all over the world. Carrots' beta-carotene and fibre content are responsible for the majority of their health advantages. This root vegetable also contains a lot of antioxidants. There are numerous health benefits, including heart disease prevention, cholesterol and blood pressure reduction, immunological booster, digestion, cancer prevention, macular degeneration improvement, and many others [22]. The rhizome of the ginger plant (*Zingiber officinale*) is commonly used in cooking as a spice. The active ingredients of ginger are gingerols and their dehydration products, shogaols, and these compounds are responsible for significant antioxidant action [30].

Tulsi (*Ocimum sanctum*), a member of the Labiatae family, is referred to as the "Queen of Plants." Linalool, eugenol, methyl charicol, and cineole are all abundant in it. The antioxidant property of eugenol is attributed to the existence of eugenol, which is also assumed to be responsible for the suppression of lipid peroxidation [20].

2. Processing of herbal tea

The herbs were purchased on the open market. Fresh leaves were taken from the farm, rinsed, and pulverized with a household blender while still wet.

The wet mass was then dried, and the dry matter was screened through a sieve before being dried in a 50 °C oven. After that, the powder was sealed in a waterproof bag and kept in a cool, dark place until needed. The ratio of tea to water, the time of infusion, the temperature of infusion, the kind of infused water, and the type of tea all influence how tea is processed^[10, 32].

3. Formulation of herbal teas

Weighed and granulated appropriate amounts of previously processed dry powders of herbs required to make tea bags, so that each tea bag corresponded to 5 g of the herbal material mixture. The dried granules were then placed in a polythene bag and stored in a cold, dry location until they were needed for further analysis, with some being poured into tea bags and properly sealed.

4. Chemical composition of herbal tea

The presence of natural antioxidants such as polyphenols in herbal tea confers health advantages^[11]. Polyphenols are thought to be extremely potent antioxidants, with properties similar to vitamins like vitamin C, E, carotene, and tocopherol^[6]. The amount of health-promoting active compounds in herbal tea beverages varies depending on the type of tea, the amount of tea leaves per serving, the brewing temperature, and the amount of time spent brewing^[13].

5. Phytochemical screening

Phytochemical analysis was used to assess the secondary metabolites present in the herbal tea mix using conventional techniques^[9].

6. Organoleptic properties

Herb teas can contain a wide range of plant materials with distinct sensory qualities, and the volatile fractions of various teas contain more than aroma-active compounds that give pleasant, fragrantly fruity, fresh, herbaceous, smoothly fragrant, deep, astringent, grassy tasting, smoky, savoury strength, bitter, and refreshing flavours^[34, 15, 8].

7. Anti-oxidative stress effects

Carrots, like many other colourful vegetables, are high in antioxidants. Carrots contain antioxidants, anticarcinogens, and immunological boosters in the form of carotenoids, polyphenols, and vitamins. Carotenoids, which are abundant in orange carrots, are powerful antioxidants that can counteract the damaging effects of free radicals. They have been proven to have anti-mutagenesis activity, which helps to reduce the incidence of some malignancies^[5]. Ginger's phytochemistry contains components that scavenge free radicals generated in biological systems. Some free radicals produced during the oxidation process are required for energy production^[25]. Oxidative stress is caused by an increase in free radical production, which can lead significant DNA damage^[7]. Tulsi protects against toxic chemical-induced injury in laboratory studies by expanding the body's levels of anti-oxidant molecules like glutathione and increasing the activity of antioxidant enzymes like superoxide dismutase and catalase, which defend cellular organelles and membranes by hoovering up damaging free radicals caused by the lack of oxygen^[21]. and other toxicants^[18]. As per research, high antioxidant activity is defined as a result of the DPPH technique of greater than

50%; moderate antioxidant activity is defined as 20-50 per cent, and low antioxidant activity is defined as a result of less than 20%. Eleazu *et al.* found 75 per cent DPPH radical inhibition for their best ginger variety^[5], however, Shukla *et al.* reported a higher value of 74.33 to 91.25 per cent for the ginger variety^[30]. According to researcher, tulsi has a radical scavenging activity of 94.90 to 96.17 per cent^[21].

8. Anti-inflammatory effect

M ornin *et al.* discovered that carrot leaves extract compounds (2,4,5-trimethoxybenzaldehyde, oleic acid, trans-asarone, and geraniol) have anti-inflammatory properties due to cyclooxygenase enzyme inhibition and provided anti-inflammatory benefits that were significant even when particularly in comparisons to anti-inflammatory drugs like Aspirin, Ibuprofen, Naproxen, and Celebrex in a study^[19]. Treatment of individuals with hypo-algesic effects, according to Christopher *et al.* To treat muscle soreness, they employed 2 g of ginger supplementation for 11 days on 36 subjects^[3]. They demonstrated that regular use of raw and heat-treated ginger reduced muscle soreness in a moderate-to-large way. Tulsi has been demonstrated to boost wound-breaking strength and speed wound healing in laboratory animals, according to scientific research^[29].

9. Toxic effects of herbal tea

There are harmful components in at least 26 herbal teas, several of which have caused major gastrointestinal, hematologic, cardiac, and nervous system illnesses. The majority of these teas are sold in health food stores, and their hazardous potential is not required to be labelled for consumer protection. Coumarin-containing herbal teas should be avoided by patients on anticoagulant medications^[26].

Herbal teas have had few toxicological research, hence the safety of many of these items is unknown. Plants produce secondary metabolites that are not required for energy generation and may serve as plant poisons in defence mechanisms against interactions with other plants, herbivores, and parasites. PAs (pyrrolizidine alkaloids) were one of the first naturally occurring carcinogens discovered in plant products, and their presence in herbal teas is a public health concern. Bioassay and chromatographic techniques were used to assess the toxic/mutagenic potential of some herbal tea combinations and single-ingredient herbal teas. As a result, it's critical to avoid human exposure to carcinogens or mutagens found in herbal tea mixture extracts^[17]. Allergies can occur as a result of drinking herbal tea, despite the fact that they are uncommon. Some of them include breathing difficulties and other respiratory or throat-related concerns, as well as swelling around the lips, tongue, or cheeks. In such instances, one should cease drinking herbal tea and seek immediate medical attention^[14].

10. Conclusion

Herbal teas are commonly consumed in the form of ready-to-brew bags or dried plant leaves, stems, roots, seeds, and other parts of the plant that can be prepared using several traditional ways depending on taste and client desire^[32]. It may be inferred from this research that scientific evidence of the health and medicinal advantages of herbal tea drinking promotes digestion, mind relaxation, and cancer prevention, among other things. Although there is no

conclusive evidence on the effects of herbal tea drinking, it is thought that an overdose may produce minor and uncommon medical problems ^[1].

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