VIDYA - A JOURNAL OF GUJARAT UNIVERSITY

Peer-Reviewed, Multidisciplinary & Multilingual Journal

ISSN: 2321-1520 **E-ISSN:** 2583-3537

UNLOCKING THE POTENTIAL OF HERBAL TEAS: A REVIEW OF THEIR THERAPEUTIC APPLICATIONS AND FUTURE DIRECTIONS

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Abstract

Herbal teas are a common beverage around the world and are utilized as therapeutic vehicles in many types of traditional medicine. Examining the data regarding the safety and clinical effectiveness of herbal teas, as well as idendifying key for research theme and knowledge gaps to guide future study, were the goals of this scoping review. Using plant speciese like lavender, chamomile, fenugreek, spearmint, stinging nettle, hibiscus, yerba mate and others, these research examined the efficacy of hrbal tea in female health, diabetes, heart disease, and weight loss. Observational studies investigated the relationship between drinking herbal tea and the risk of liver disease, cancer, and harmful of consuming environmental pollutants found in the plant material. Even while herbal teas are popular and plant components are used to create new drugs, there aren't many studies examining their safety and therapeutic usefulness. In this study, we go over the potential clinical and preventative health benefits of herbal teas as well as the additional research needed to determine whether frequent use can promote healthy living in general.

Keywords: *Herbal tea, antioxidant, Infusion, Health benefits, Traditional medicine*

1. RATIONALE OF THE STUDY :-

With an emphasis on the tea's alleged traditional meditional uses, associated phytochemical and pharmacological research and safety concerns, the study attempts to compile the current understanding of plant species utlilized as herbal teas by various ethnic groups in various parts of india.

2. INTRODUCTION

Humans have always included flowers in their daily lives. They have served a variety of functions in daily life, including religious purposes, ornamentations, decorations for important human occasions, culinary preprations as foods, essential oils, and cosmetics.

Flowers have been utilized as individual medications or as a component of compound formulations in a variety of traditional meditions, in addition to its domestic applications.

Aromatherapy has recently gained a lot of attention as a means of body and mind healing.

The assessment of flower's medicinal value is based on their possible health benefits, primarily the impact of their colour, flavor and ordor components on antioxidant and reactive oxygen scavenging activities.

Musa paradisiaca, Punica granatum, Rosa centifoliya, Leucas aspera, Nelumbo nucifera, Crocus sativus L., Hibiscus rosa-sinensis and Moringa oleifera are among the chosen traditional flowers that have been included and their meditional properties scientifically examined.

2.1 Herbal Tea

The majority of herbal tea infusion are used on a regular basis and are made from edible medicinal plants. The classification and functional nutritional value of different herbal teas have not been throughly studied, despite the fact that herbal teas has been used for many years in healthcare application around the world.

China has been using tea for thousands of years, thus it has been a long history. The Tang Dynasty is when non-cammelia tea (Herbal tea) first appeared. This is also when mixed tea, meditional tea, and substitutional teas first appeared. (zhu,2018)

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Herbal teas come in wide range of compositions, are mostle manufactured from natural source (mostly herbs), and offer a number of health advantages. Herbal teas can contain either fresh or dried plant ingredients. Stems, leaves, Bark, seeds, fruits, flowers, or entire plants from southern china that includes one or more kinds of herbal tea plants. (Y.liu et al.,2013)

Herbal tea is made by boiling or brewing plant ingredients rather than using tea in the conventional sense (camellia). On the other hand, some herbal teas made using green tea technology, like leaf tea, flower tea, fruit tea, can be made simply by soaking them in cold water. Due mostly to its recently verified health benefits, tea drinking has increased globally in recent years. (R. cooper et al.,2005)

3. HEALTH BENEFITS OF TEA'S

Antioxidants, which are compounds that fight disease and help preventing illness, are abundant in tea. The detoxifying qualities of these antioxidants shield cells from the damaging effects of free radicals, which can result in cancer, atherosclerosis, and blood clots. It has also been demonstrated that drinking tea can help prevent number of crippling illnesses in people, including maintaining metabolic and cardiovascular health.

Because of their numerous advantages, including anti-aging and anti-inflammatory properties, antioxidants have emerged as molecules of scientific interest. It is still in use today in a lot of places. Antioxidants are added to a variety of foods in food technology to improved them and solve issues. As a results, research into the antioxidant properties of natural foods and their constituents is also advancing quickly. Studies on encapsulation, which is intended to stabilize and preserve food ingredients, have also substituted antioxidants.(Zehiroglu et al., 2019)

Catechins, which are antioxidants, are abundant in jasmine tea. These antioxidant identify and eliminate any dangerous substances or free radicals that may contribute to ilness.

Herbal teas are a common beverage around the world and are utilize as medicinal vehicles in many types of traditional medicines.

Herbal teas made from plant species like lavender, chamomile, fenugreek, spearmint, hibiscus and mixture of herbs are used to trate female health issues, diabetes, hearth disease, and weight loss.

Observational studies investigated the relation between the risk of liver disease, cancer and the dangerios of consuming environmental pollutions present in the plant material and herbal teas.

Polyphenols such as quercetin, gallic acid, anthocyanins and kaempferol are abunmdant in rose tea. These antioxidants supports healthy living by scavenging free radicals.

In addition to having the anti-diabetic, anticancer,and antibacterial qualities, blue tea may also strengthen the hearth and brain.

4. CLASSIFICATION OF HERBAL TEA:

In addition to being utlized in healthcare and health maintenance, herbal tea is significant component of tea culture. The majority of teas are made using the green tea manufacturing method and fall under the category of non-fermented teas. Oolong tea and black tea are examples of semi-fermented and fermented teas. (Heck et al.,2007)

4.1 Non-fermented:

The majority of Herbal teas are made by picking, withering, blanching, rolling, and drying; they are non-fermented Tea. Southwest china uses herbal tea made from dried Castanopsis lamontii buds to prevent oral inflammation and freshen breath. (Gao et al.,2020). Commonly known as "long- life herbal tea" or "plant to heal," Combretum micranthum G. Don is used extensively in traditional medicine in West Africa. The dried flower heads Compositae plants (Matricaria recutita L., Chamomilla recutita L., and Matricaria chamomilla) are used to make the well-known herbal beverage known as chamomile tea. Its anti-inflammatory properties have historically led to its usages in medicine. (Mckay et al.,2006)

4.2 Fermented Tea :

Picking, withering, rolling, fermenting, and drying are primary methods used to make fermented tea, Which makes up a minor percentage of herbal tea. South Africa's native Aspalathus linearis plants are used to make the well-known herbal tea known as Rooibos. Due in part to their phenolic components, fermented herbal teas are high in polyphenols and are linked to a number of health advantages. (Zhang et al.,2020). For hundreds of years, southern china has utilized vinegar tea, which is produced from fermented leaves of Ampelopsis grossedentata, as a herbal tea and and traditional medicine. Vine tea is processed in a manner akin to that of traditional black tea manufacture. (Wang et al.,2020)

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4.3 Semi-fermented tea:

Picking, drying, rolling, more drying, screening, and baking are the primary processes required to make semi-fermented tea. (Yang et al.,2013). About 20% of the dry weight of fermented tea is made up of catechin, the primary biochemical component. Through condensation during fermentation, polyphenol oxidase, oxidizes the catechin to produce arubigins and flavonoids. (Yasil et al.,2013)

5. EFFECTIVE CHEMICAL COMPOSITION:

Polyphenols, Flavonoids, Terpenoids, Volatile oils, Alkaloids, Organic acids, Polysaccharides are all found in herbal teas. The primary active ingredients in herbal teas are Flavonoids and Phenols. The natural active components in herbal teas that are frequently reported are listed below.

5.1. Polyphenols

Complex secondary phenol compounds called polyphenols are found in many parts of plants, primarily in the fruits, leaves, roots, and skins. Antioxidation and insulin resistance reduction are the two main ways that natural polyphenols assist the human body.

Tea's primary active ingredients, polyphenols, make up around 25% of its dry weight. Catechin, gallic acid, (-) gallocatechin, sinapinic acid, caffeic acid, (-) epicatechin, chlorogenic acid, gallocatechin, ellagic acid, and corilagin are among the polyphenols included in herbal tea. (Ren et al.,2019)

5.2 Flavonoids

The primary active ingredients in the majority of herbal teas are flavonoids. The active ingredients in Rooibos, Kudingcha, Hong Dou Shan (Taxus chinesis) leaf tea, Combretum micranthum G. Don tea, Isodon amethystoides (Benth), Hara tea, mountain tea, plateau tea, and She medicine Fresh herb tea are luteolin, rutin, kaempferol, quercetin, myricetin, dihydromyricetin and apigenin. (wupper et al.,2020)

5.3 Terpenoids

Mevalonic acid is the starting point for terpenoids and their derivatives, which have isoprene units (C5 units) as the fundamental structural unit in their molecular skeleton. Terpenoids are found in a wide variety of plants and have garnered a lot of interest because of their many biological functions. Oleanolic acid, ursolic acids, friedelin, akebia saponin D, and ilexgenin B are the primary terpenoids found in herbal tea. (X.chen et al.,2017)

5.4 Alkaloids

Other than proteins, peptides, amino acids, and vitamin B, alkaloisd are nitrogen- containing substances that are mostly found in plants. Alkaloids, such as theacrine in Yunnan Kucha tea, hordenine in barley tea, and caffeine in Jasmine-scented tea , are the active components of several herbal teas. In addition to atropinol and scopolamine, gouqiye tea has a glycine betaine concentration of roughly 5.1% (J. Dang et al.,2011)

5.5 Other compounds

Many of the biologically active substances found in herbal tea, including tannins, steroids, anthraquinone, polysaccharides, proteins, amino acids, and vitamins, have recently been identified through research. The leaf tea of Strobilanthes crispus was used to isolate vitamin C, vitamin B1, and vitamin B2. Siraitia grosvenorii herbal tea has been shown to include L-rhamnose monohydrate, DL-arabinose, and L-glutamine.(Dujni et al.,2020)

Table 1: Health Benefits in various edible flowers

Sr no.	Scientific Name	Common Name	Family	Properties	Reference
1	Camellia sinensis	green tea	Theaceae	Stress resistance and neuroprotective properties	Prasanth et al.,2019
2	Camellia sinensis assamica	Black/red tea	Theaceae	Weight reduction, Diabetes prevention	Hursel et al.,2009
3	Clitoria ternatea	Aparajita	Fabaceae	Prevention of neurodegenerative disease and diabetes mellitu	Sarma et al.,2023

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4	Hibiscus rosa-sinensis	China rose	Malvaceae	Blood pressure regulation and antioxidant effects	McKay et al.,2006
5	Rosa ordata	Rose	Rosaceae	Help to whome blood pressure fluctuation are undesirable	Vinokur et al.,2006
6	Calendula officinalis	Marigold	Asteraceae	Anti-epileptic and anti-inflammatory	Sachin et al.,2021
7	Jasminum sambac	Mogra	Oleaceae	Anti-inflammatory	Jian et al.,2023
8	Ocimum tenuiflorum	Tulsi	Lamiaceae	Stress reducing and immune support	Cohen et al.,2014
9	Lavandula angustifoliya	Lavender	Lamiaceae	Anxiety and stress reduction	Koulivand et al.,2013
10	Rosmarinus officinalis	Rosemary	Lamiaceae	Cognitive enhancement and antioxidant properties	Moss et al.,2012
11	Mentha piperita	Peppermint	Lamiaceae	Digestive health support and pain relief	Cash et al.,2016
12	Zingiber officinale	Ginger	Zingiberaceae	Anti-inflammatory and antiemetic effects	Marx et al.,2015
13	Curcuma longa	Turmeric	Zingiberaceae	Anti-inflammatory and antioxidant effects	Hewlings and kalman,2017
14	Cinnamomum spp.	Cinnamon	Lauraceae	Blood sugar regulation and antioxidant properties	Lu et al.,2011
15	Matricaria chamomilla	Chamomile	Asteraceae	Calming and sleep-promoting properties	Srivastava et al.,2010

7. MOST COMMON CONSUMED TEA:

7.1 Green tea (GT) -Camellia sinensis

With notable pharmacological effects on human health, GT is generally regarded as a beverages that promote health. The main objective of producing GT is to maintain the natural polyphenols in the tea leaf because it has more catechins and vitamins. Therefore, for optimal health, a cup of tea should be the highest possible amount of tea polyphenols (Soni et al.,2015, Zhang et al.,2021)

The favorable therapeutic effects of GT, such as its anticancer, antidiabetic, neuroprotective, and immune-busting properties, are the main focus of the majority of the literature on the subject. The detrimental effects of GT on human health. however, are the subject of far less research. Green tea's polyphenol contents, especially flavanols, is primarily responsible for its health promoting properties. (Ohishi et al.,2021)

Figure 1 : Green tea

7.2 Black tea – camellia sinensis assamica

The large-leaves tree known as assamica was brought to varios other nations with the semitropical climates after being found in the southwest of China and India. The manufacturing of green tea is

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dominated by the sinensis tea because to its distinct flavor and taste, while the assamica tea is primarily utilized to produce black tea due to its high catechin and tannin content.

In western nations, the majority of the market is occupied by black tea. Drinking tea is said to have anti-oxidant, anti-inflammatory, cancer-preventing, heart disease reducing and other health advantages. Extraction methods, physiological activities and high value applications of tea residue and its active components. (Miao et al.,2023)

Figure 2: Black tea

7.4 Hibiscus Tea -Hibiscus sabdariffa

For thousand of year, people have used hibiscus, also known as Hibiscus sabdariffa, a tropical plant with vivid, trumpet-like blossoms, as a beverage and medicinal remedy. Although there are hundreds of hibiscus species, the one most frequently used to make a tea is Hibiscus sabdariffa. According to some research, Hibiscus sabdariffa tea extract may be good for us because of it's anti-inflammatory and antioxidant qualities.

Hibiscus tea has a dark red colour and has a no caffeine.

According to Routhenstein, dried calyces, a group of edible sepals, are used to make hibiscus tea. (Tea, W.I.H. Health Benefits Of Hibiscus Tea, According to Experts.)

Figure 3: Hibiscus Tea

7.4 Blue tea-Clitoria ternatea

The petals of the Clitoria ternatea plants are used to make blue tea.

Butterfly pea flower-based blue tea has been recognized as a possible source of phytochemical properties that may be essential in addressing risks to human health. Antioxidative, anti-inflammatory, anti-stressor, anti-diabetic, and anti-carcinogenic properties are just a few of the health advantages of blue tea. (Kar et al.,2023) . Clitoria ternatea is an inexpensive, high-quality blue tea from india. (Barman et al.,2023)

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Figure 4 : Blue tea

7.5 Mogra tea -Jasminum sambac

One scented variety of green tea that is different from regular green tea due to an additional heat stage in processing is jasmine tea. catechine, which are antioxidant, are abundant in jasmine tea. These antioxidants identify and eliminate any dangerous substances or free radicals that may contribute to illness.

Figure 5: Mogra tea

7.6 Rose tea – Rosa Odorata

Made from the fragrant petals and buds of rose flowers, rose tea is a fragrant herbal beverage. Though many of these are not well backed by science, it is said to provide a host of health benefits. Given that rose tea is inherently caffeine-free, it might be a fantastic substitute for some of the more popular hot, caffeinated drinks as well as quercetin. These antioxidants support healthy living by scavenging free radicals.

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figure 6 : Rose tea

7.7 Pepermint Tea (Mentha piperita)

People have consumed pepermint tea, which is valued for its cooling flavor and certain health benefits. It is prepared from the leaves of the Mentha piperita plant. Traditionally, stomach issues have been treated with peppermint tea. (Cash et al.,2016). Furthermore, peppermint tea has demonstrated antibacterial effectiveness against a range of bacteria and fungi, including antibiotic resistance ones.

figure 7 : Peppermint Tea

7.8 Ginger Tea (Zingiber officinale)

A popular natural cure and tasty beverage, ginger tea is made form the rhizome of the ginger plant. Numerous bioactive substance found in ginger tea support its medicinal qualities. These substances have been thoroughly studied for their possible health advantages because of their anti-inflammatory, antioxidant, antibacterial and antiemic qualities. Ginger tea is frequently used to support gastrointestinal health and ease digestive discomfort. (Haniadka et al.,2013)

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Figure 8: Ginger Tea

7.9 Lavender Tea (Lavandula angustifoliya)

The dried lavender flowers are used to make lavender tea, which has become a popular beverage and natural treatment. Numerous bioactive substances found in lavender tea support its medicinal qualities. (silva et al.,2015)

Due to it's relaxing effects on the nervous system, lavender tea is frequently drank. Compounds found in lavender, like... linalool, have anxiolytic properties that encourage relaxation and lessen the symptoms of stress and anxiety. (Moshiri et al.,2015)

Figure 9: Lavender Tea

7.10 Tulsi Tea (Ocimum tenuiflorum)

In traditional ayurvedic medicine, Tulsi, often called Holy Basil (Ocimum tenuiflorum), is a highly esteemed herb. The leaves of the tulsi plant are used to make tulsi tea, which has become well liked as a cooling and healing beverage. Flavonoids and essential oils are among the many bioactive substances found in tulsi tea. These substance give tulsi tea is unique flavor, aroma and possible health advantages.

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Figure 10: Tulsi Tea

8. CONCLUSION

To elucidate its active ingredients and provide adequate with conventional applications, more research is required. Furthermore, numerous research have documented the benefits of herbal tea and its effects on human health thus far.

The specific mechanism underlying these health advantage are rarely assessed by researchers who examine biologically active chemicals, therefore this is field that require more study. Additionally, herbal tea has a distinct flavor and storage sensory qualities. According to the study, in this fast-paced age, the prepared herbal teas may be utlized as a novel nutritional source with medicinal potential.

There was a positive correlation between the antioxidant activity expressed as TEAC and the total polyphenol content of both individual and herbal teas.

Significant difference in the antioxidant activity of specific teas from various manufactures were noted, underscoring the necessity of establishing appropriate technological parameters in the manufacturing of teas as well as methodical control of their antioxidant qualities.

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