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Preparation and Phytochemical Analysis of Polyherbal Tea Bag

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Abstract: Herb blooms, leaves, seeds, roots, or dried fruit that aren't from the Camellia sinensis tea plant are referred to as herbal tea. Lemongrass, cinnamon, hibiscus, and butterfly pea (Clitoria ternatea) are a few plants that can be used to make herbal teas. The butterfly pea is traditionally used as a culinary coloring to give food its blue color and as an eye medication, brain boosting. As antioxidants, antibacterial, anti-inflammatory, antidiabetic, anti-cancer, and immunomodulatory agents, butterfly pea and hibiscus are beneficial and reduce blood pressure. In order to improve the quality of the herbal tea, it is necessary to dry the tea utilizing sunshine throughout the producing process. Organoleptic tests are used to conduct the analysis (color, taste, and scent).

Keywords: Butterfly pea, hibiscus, cinnamon, herbal tea , and drying.

I. INTRODUCTION

Herbal teas, a popular beverage consumed for centuries, differ from traditional teas like green and black tea, as they are crafted from various plant parts besides Camellia sinensis leaves. They are brewed similarly to standard teas and can be categorized by type (e.g., cinnamon, dandelion) or health function (e.g., cognitive health, gut health).[1][2]

Rich in polyphenols, herbal teas offer diverse health benefits. For example, cinnamon tea contains procyanidins and catechins, while dandelion tea boasts flavonoids and phenolic acids. Chamomile tea is abundant in flavonoids such as apigenin and quercetin, and peppermint tea is also packed with flavonoids.[3][4]

These polyphenols contribute to herbal teas' antioxidant, anti-inflammatory, and other health-supporting properties, aiding in the prevention and treatment of ailments like diarrhea and respiratory disorders.[5][6]

The quality of herbal teas and their health effects depend on brewing methods. Understanding these techniques is crucial for optimizing tea preparation and extracting the maximum benefits from these botanical brews.[7]

II. IMPORTANCE OF HERBAL TEA

Herbal tea is significant because it has the ability to improve general health and wellbeing via a number of different channels. The following are some salient points emphasizing its importance:

1) Natural Remedies: Herbal teas are a natural way to address a range of health issues. They can help with common symptoms including colds, digestive problems, and stress-related conditions.
2) Holistic strategy: Herbal teas represent a health-conscious strategy that supports mental and emotional well-being in addition to treating physical ailments. This integrative method helps to maintain general health.
3) Minimal Side Effects: Herbal teas generally have less side effects than pharmaceutical prescriptions, which makes them a safer option for many people, particularly when used under a doctor's supervision.
4) Accessibility: You may easily find herbal teas and make them at home with basic ingredients. They provide a practical and affordable means of introducing natural therapies into everyday life.
5) Customization: People can customize their selections of herbal teas to suit their own health needs and preferences thanks to the large range of options accessible. Strategies for individual wellness are made possible by this personalization.
6) Cultural Heritage: Used for millennia in many traditional medical systems across the world, herbal teas have a rich cultural history. They are an amalgam of various cultural customs and wisdom that have been passed down through the ages.
7) Health Promotion: By offering vital nutrients, antioxidants, and phytochemicals that support biological processes and fight oxidative stress, regular herbal tea drinking can help to promote general health.
8) Supportive Care: Herbal teas can help manage symptoms, enhance overall treatment outcomes, and improve quality of life in addition to traditional medical therapies.

In conclusion, the benefits of herbal tea include its ability to enhance conventional medical treatments and promote general well-being, as well as its cultural relevance, accessibility, low side effects, customisation, and holistic approach to health.[8]

To sum up, herbal tea has a number of benefits:

a) Packed with antioxidants, which lower the risk of chronic illnesses and fight free radicals.
b) Has anti-inflammatory qualities that help with ailments like arthritis.
c) Promotes the health of the digestive system by reducing symptoms like indigestion and bloating.
d) Encourages calmness and lowers tension, which improves sleep.
e) Boosts immunity, which may lessen the intensity of colds.

6. It's a calorie-efficient and hydrating beverage option.

Adaptable to individual tastes and needs, offering a range of flavors and possible health benefits.[8]

III. INGREDIENTS

A. Shankhpushpi

Traditionally, shankhpushpi has been used to treat poor energy, weariness, sleeplessness, and nervous debility. The entire herb is used medicinally as a decoction made with milk and cumin for fever, nervous debility, and memory loss. Convolvulus pluricaulis is a tonic for the brain. is applied as a febrifuge, alterative, and tonic. It is an effective treatment for digestive issues, particularly dysentery. The plant is reportedly a well-known medication that improves memory. It has two purposes: tranquilizer and psychostimulant. It is said to ease mental strain. Triglycerides, phospholipids, total serum cholesterol, and non-esterified fatty acids are all decreased by the plant's ethanolic extract.[9]

Clinical research has shown that treating anxiety neurosis patients can have measurable positive consequences. The herb produces a notable reduction in the amount of anxiety and neuroticism resulting from varied levels of pressures. It also promotes quiet and peace, restful sleep, and a release from tensions, anxiety, and mental exhaustion. It seems that the herb works by adjusting the brain's neuro-chemistry.[9]

Moreover, there are no negative consequences from using the plant and it is non-toxic. However, there is an energizing influence on weight increase and health improvement. The entire herb is utilized as a febrifuge, tonic, and substitute.

Medicinal plants and herbs are used by a growing number of patients worldwide for therapeutic purposes. Human health is declining daily as a result of shifting lifestyles. As a result, Clitoria can help you make informed choices about how to utilize Clitoria ternatea. Clitoria ternatea contains certain active chemical elements that are used to treat diseases and conditions that pose a serious threat to life. Numerous pharmacological actions, such as those that are antibacterial, antioxidant, anticancer, hypolipidemic, cardiovascular, neurological, respiratory, immune system, anti-inflammatory, analgesic, and antipyretic, are demonstrated by Clitoria ternatea. Clitoria ternatea is the scientific name for Aparajita, and it is a member of the Fabaceae (Pipilionaceae) family.[9]

Plant profile

Clitoria ternatea is the scientific name for Aparajita, and it is a member of the Fabaceae (Pipilionaceae) family.

Clitoria tanganicensis Micheli, Clitoria albiflora Mattei, Clitoria bracteata Poir, Clitoria mearnsii De Wild., and Clitoria zanzibarensis Vatke are synonyms.

1) Taxonomic classification: -

Kingdom: Plantae
Species: Clitoria ternatea
Subkingdom: Viridaeplanta
Infrakingdom: Streptophyta
Division: Tracheophyta
Subdivision: Spermatophytina
Infrodivision: Angiospermae
Class: Magnoliopsida

Fig. Shankhpushpi Flower [11]

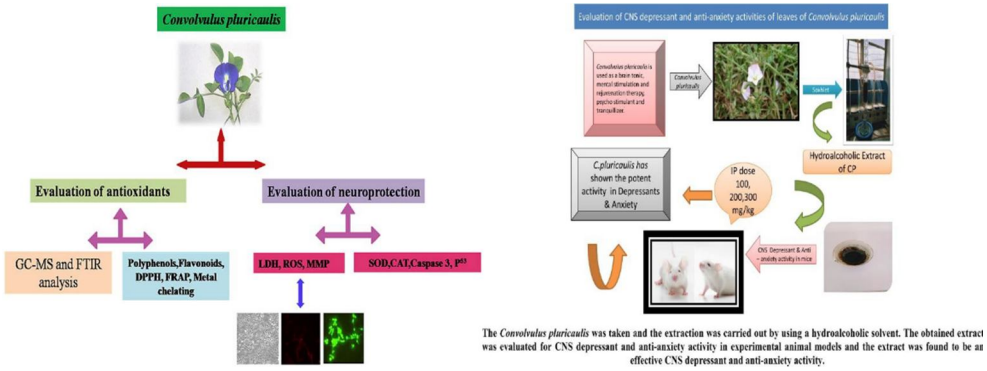
Superorder: Rosanae
Order: Fabales
Family: Fabaceae
Genus: Clitoria L.[9]

2) Description:-

The perennial plant Convolvulus pluricaulis resembles morning glory. Spread across the ground, its branches can reach lengths of over 30 cm. The leaves are elliptic in form (2 mm) and positioned sporadically with branches or flowers. The blooms are blue in color (5 mm). The plant, usually referred to as aloe weed in four languages, is widespread in India, particularly in the state of Bihar. It is well known that the plant has medicinal properties in all sections. According to popular belief, this particular herb has the unique capacity to improve every element of brain function, including memory, recall, and learning. Still, the reason it's so popular is because it works wonders for treating insomnia.[10]

3) Chemical Constituents:-

Shankhpushpi's chemical components include starch, rhamnose, maltose, sucrose, and D-glucose carbohydrates. Together with fatty acid and wax constituents, hydrocarbons, aliphatic and sterol, and certain other bio-chemicals like scopoletin, glacial acetic acid, three coumarins, β-sitosterol, kaempferol, tropane alkaloids, linoleic acid, palmitic acid, and straight chain hydrocarbons like hextriacontane, 20-oxodotriacontanol, tetratriacontanoic acid, and 29-oxo triacontanol are also present. The plant's alcoholic extract contains beta-stigmatosterolglucose, microphyllic acid steroid, kaempferol, and di-oh-cinnamic acid. Additionally extracted from the plant are hydroxycinnamic acid, octacosanol, tetracosane, glucose, and sucrose.[12]



B. Hibiscus

Malvaceae, the family of mallow flowers, includes the genus Hibiscus. With several hundred species endemic to tropical, subtropical, and warm-temperate climates worldwide, it is rather big. A common characteristic of member species is their eye-catching blooms. There are several names for the hot and cold tea prepared from hibiscus blossoms in many different locations around the world. The color, tanginess, and flavor of the beverage are well-known. Bissap in West Africa, karkadé in Egypt and Sudan, flor de Jamaica in Mexico, gudhal in India, and gongura in Brazil are some of the names for it. Some call it roselle, which is the colloquial term for the Hibiscus flower.[13]

Hibiscus flowers are considered to have a wide range of traditional medicinal uses, such as chemopreventives, antimutagens, antifungals, antioxidants, antihypertensives, antiatherosclerotics, antinociceptives, and antipyretics. Their polyphenolic components are mostly responsible for these qualities.[13]

1) Taxonomic classification:-

Super division: Spermatophyta-Seed plants
Division: Magnoliophyta-Flowering plants

Class: Magnoliopsida-Dicotyledons
Subclass: Dilleniidae
Order: Malvales
Family: Malvaceae-Mallow family
Genus: Hibiscus L.-Rosemallow
Species: Hibiscus rosa sinensis L.– shoeblackplant

Fig. Hibiscus flower[14]

2) Description:-

Hibiscus flowers are considered to have a wide range of traditional medicinal uses, such as chemopreventives, antimutagens, antifungals, antioxidants, antihypertensives, antiatherosclerotics, antinociceptives, and antipyretics. Their polyphenolic components are mostly responsible for these qualities. The cultivated variations determine whether the petals are single or double, smooth or scalloped. Partway up the column, the anther—which produces pollen—is visible. At the apex of the column are five rounded stigma lobes, which are where pollen settles to initiate fertilization. Ovoid in form, with a broader base than a point, Hibiscus leaves grow to a length of 5 to 15 cams, alternately grouped on the branches. The leaves have serrated borders with lighter areas, and they can be either dark green or variegated. The red hibiscus fruit is a dry, five-segmented capsule that can hold up to three kidney-shaped, 2.5 cm long seeds.[15]

3) Chemical Constituents:-

According to reports, the nutrients in the edible portion of the flower (61.6%) were as follows (per 100 g): calcium 4.04 mg, phosphorus 26.68 mg, iron 1.69 mg, thiamine 0.031 mg, riboflavin 0.048 mg, ascorbic acid 4.16 mg, moisture 89.8%, nitrogen 0.064%, fat 0.36%, crude fiber 1.56%, and niacin 0.61 mg. Cyanidin-3-sophoroside was the main anthocyanin present in the red blooms of H. rosa-sinensis. Studies on H. rosa-sinensis revealed that red-petalled cultivars had a higher amount of anthocyanin bands than yellow-yellow orange ones. The distribution of carotenoids, flavonol, leucoanthocyanins, and anthocyanins varied among the types in the various colored groups. The flowers contained 7 mg of quercetin and 36 mg of cyanidin per gram of fresh tissues, according to flavonoid aglycone analysis. There were other reports that the blooms contained the following flavones: cyanidin-3, 5-diglucoside, quercetin-3-diglucoside, quercetin-3, 7-diglucoside, and cyanidin-3-sophoroside.Kaempferol-3-xylosylglucoside is the glucoside occurring in deep yellow and white flowers, as well as ivory white blooms. Stems and leaves include three cyclopropane chemicals and their derivatives, β-sitosterol, stigma sterol, and taraxeryl acetate.[16]

C. Cinnamon

The Lauraceae family includes the evergreen tree of tropical medicine, cinnamon (Cinnamomum zeylanicum and Cinnamon cassia). One of the most significant spices that people use on a daily basis worldwide is cinnamon. Essential oils and various derivatives like cinnamaldehyde, cinnamic acid, and cinnamate are the main ingredients of cinnamon. Besides its numerous health benefits as an antioxidant, anti-inflammatory, antidiabetic, antibacterial, anticancer, lipid-lowering, and cardiovascular disease-lowering agent, studies have shown that cinnamon may also have protective effects against neurological conditions like Parkinson's and Alzheimer's sickness. This article provides an overview of cinnamon's pharmacological potential and practical applications.

1) Taxonomic classification

Kingdom: Plantae
Subkingdom: Viridiplantae
Infrakingdom: Streptophyta
Super division: Embryophyta

Division: Tracheophyta

Sub division: Spermatophytina
Class: Magnoliopsida
Super order: Magnolianae
Order: Laurales
Family: Lauraceae

Fig. Cinnamon[18]

Genus: Cinnamomum Schaeff
Species: Cinnamomum verum[17]
Description:-

Evergreen, the C. verum tree reaches a maximum height of around 10 m (30 ft). It has robust branches and smooth, yellowish-colored bark. It has pointed-tipped, leathery leaves that are 11–16 cm (4.5–6.25 in) long. On top of the leaf, the color is dark green; on the bottom, it is light green.

The tubular, six-lobed, inconspicuous yellow flowers have an unpleasant smell. They grow in panicles, or clusters, that are as long as the leaves. A cup-shaped perianth that develops from the outer sections of the flower partially encloses the tiny, meaty berry, which ripens to black and measures 1 to 1.5 cm (0.25 to 0.5 in) in length. The inner bark of the cinnamon tree is scraped off and dried before being crushed into a powder. This produces the spice form of cinnamon. To enable the harvesting of the coppiced shoots, it is also possible to coppice (cut back)cultivated trees. The leaves and twigs are steam-distilled to extract cinnamon oil.[19]

2) Chemical Constituents:-

Numerous essential oils, as well as resinous substances including cinnamaldehyde, cinnamate, and cinnamic acid, make up cinnamon.said that the presence of cinnamaldehyde and the absorption of oxygen are what provide the spicy taste and scent. Cinnamon's color darkens with age, enhancing the resinous components. Sangal listed a number of cinnamon's physiochemical characteristics. a large variety of essential oils, including b-caryophyllene, L-borneol, trans-cinnamaldehyde, cinnamyl acetate, eugenol, L-borneol, caryophyllene oxide, E-nerolidol, α-cubebene, α-terpineol, terpinolene, and α-thujene.[20]

D. Clove

Ayurveda is the primary application for clove. Most people refer to it as "lavang." The prized spice clove (Syzygium aromaticum) belongs to the Myrtaceae family. The primary usage of cloves is in culinary preparation. Due to its antibacterial, antiviral, anti-inflammatory, anti-diabetic, and antioxidant qualities, clove oil finds application [1]. With between 1200 and 1800 flowering plant species spread over tropical and subtropical parts of Asia, Africa, Madagascar, the Pacific, and the Ocean, Syzygium is the biggest genus in the Myrtaceae family [2, 3]. China, the US, the EU, and other nations and territories have approved eugenol, the primary component of clove oil, as a food preservative.[24][26]

Synonyms:- Clovos, Caryophyllus, Lavang, Laung, Grambu, Grampus, Krambu.

Biological source:-The biological source is a dried Eugenia caryophyllus flower bud.[27]

1) Taxonomical Classification

Kingdom: Plantae
Sub Kingdom: Tracheobionta
Super Division: Spermatophyta
Division: Magnoliphyta
Class: Magnoliopsida
Subclass: Rosidae
Order: Myrtales
Family: Myrtaceae
Genus: Syzgium
Species: aromaticum[28]

Fig. Clove [25]

2) Chemical Constituents:-

Eugenol makes about 82–88% of its composition, with eugenyl acetate and other trace amounts. Eugenia caryophyllus twigs are the source of stem oils. Ninety to ninety-five percent of it is eugenol, with a few additional trace amounts. Eugenol is a substance that contributes significantly to the flavor of cloves. The primary bioactive ingredient in cloves is eugenol, which ranges in concentration from 9 381.70 to 14 650.00 mg per 100 g of fresh plant material. Gallicacid is the phenolic acid component with the highest content (783.50 mg/100 g fresh weight). The essential oil's chemical makeup derived from clove buds (Syzygiumaromaticum). This table shows that 18 compounds were characterized, which accounts for about 99.95% of the clove essential oil.[29][30][31]

The three main ingredients are β-Caryophyllene (3.56%), eugenol (87.00%), and eugenyl acetate (8.01%).There are 23 known ingredients in all, with eugenol making up 76.8% of the total. The other primary constituents are β-caryophyllene (17.4%), α-humulene (2.1%), and eugenyl acetate (1.2%).[32][33]

E. Ginger:

Plants classed as culinary herbs, food, and medicinal include the ginger (Zingiber officinale). The herb possesses long-established health-promoting qualities that are still in use today. Studies on animals and epidemiology have verified its bioactivity. Studies have demonstrated that the plant has a wide range of bioactivities, from antibacterial to anticancer agent.

Rhizome is high in fiber, protein, and essential oil, in addition to ginger. This chapter lists the many clinically supported benefits of ginger and suggests that the rhizome of ginger has the potential to be a functional food and nutraceutical with few adverse effects.[34]

1) Taxonomical Classification:-

Kingdom: Plantae
Division: Magnoliophyta
Class: Liliopsida
Order: Zingiberales
Family: Zingiberaceae
Genus: Zingiber

Species: Z. officinale[36]

Fig. Ginger[35]

2) Description:-

The "ginger family," Zingiberaceae, is a family of flowering plants that includes fragrant perennials with tuberous or creeping rhizomes. Typically found underground, a rhizome is a horizontal stem that frequently produces roots and shoots from its nodes. Rhizomes are the above-ground or soil-surface roots of some plants. Rhizomes, also known as creeping rootstalks or rootstocks, are different from stolons in that a stolon sprouts from an existing stem, has long internodes, and produces new shoots at the end. In contrast, a rhizome is the main stem of the plant, has short internodes, and sends out roots from the bottom of the nodes and new upward-growing shoots from the top of the nodes.[37]

3) Chemical Constituents:-

A little over 2 percent protease, 1-3 percent volatile oils (gingerol, shogoal, zingiberene, and zingiberol), 50 percent starch, 9 percent protein, 6–8% lipids (glycerides, fatty acids, phosphatidic acid, lecithins, etc.), and vitamin A and niacin make up ginger. Up to 3% of the essential oil responsible for the spice's aroma is present in ginger. Sesquiterpenoids make up the majority of the components, with (-)-zingiberene being the primary one. There has also been some identification of a tiny monoterpenoid portion (β-phelladrene, cineol, and citral) and lesser quantities of additional sesquiterpenoids (β-sesquiphellandrene, bisabolene, and farnesene).[38]

F. Lemon Grass

Cymbopogon is the genus that contains the fragrant therapeutic grass known as lemon grass. It is common throughout the tropical and semi-temperate zones of the continents of America, Africa, and Asia. Because of the high citral concentration in its oil, this grass has a distinct lemon aroma. The oil's redolence makes it suitable for use in detergents, fragrances, and soaps. Additionally, the pharmaceutical business uses it. There are already a plethora of ethnopharmacological uses for lemon grass. In addition to nutrients like lipids, proteins, fiber, and minerals, it also has a variety of bioactive substances that fall into the following categories: alkaloids, terpenoids, flavonoids, phenols, saponins, and tannins. The many secondary metabolites that lemon grass generates may be responsible for its ability to restore health. This article aims to provide a general overview of lemon grass while stressing its therapeutic qualities that make it an effective plant for pharmacognostic uses.[21]

1) Description:-

Equally useful in the garden is lemongrass. With a short rhizome, this tropical grass grows in thick clumps up to 6 feet (1.8 meters) tall and around 4 feet (1.2 meters) wide.[22]

2) Chemical Constituents:-

Phytochemicals or secondary metabolites may contribute to the medicinal properties of certain plants. Medicinal plants contain these chemicals in equal amounts. Isolated and characterized from C. citratus are important compounds like phytosterols, anthocyanin, amino acids, organic acid, phenolic compounds, volatile components, fatty acids, fumesol, flavonoids, isovaleranic aldehyde, methylheptenone, valeric esters, L-linanool, furfurol, isopulegol, and p-coumaric acid.[23]

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G. Lemon

The Rutaceae family of flowering plants includes the lemon (Citrus × limon), a tiny evergreen tree that is native to Asia, namely Northeast India (Assam), Northern Myanmar, and China.

1) Description: -

The purpose of this study is to evaluate and compare the antibacterial properties of an industry-available brand's aqueous extracts of black, green, and lemon tea. Techniques: Commercially available black tea, green tea, and lemon tea were tested for their antibacterial activity against Lactobacillus acidophilus and Streptococcus mutans at three different concentrations (1.5 g, 5 g, and 7.5 g) using the well-diffusion method. Tea's antibacterial effectiveness was evaluated by measuring the diameter of the zone of inhibition following incubation in the suitable culture medium.[39]

2) Taxonomic classification: -

Kingdom: Plantae
Phylum: Magnoliophyta
Class: Magnoliopsida
Subclass: Rosidae
Order: Sapindales
Family: Rutaceae
Genus: Citrus

Fig. lemon [41]

Subject: Citrus x limon (L.) Osbeck

3) Chemical Constituents: -

There is between 2 and 4% volatile oil in lemon peel.
The peel also contains bitter compounds, pectin, hesperidin, and calcium oxalate.
About 90% of the drug's volatile oil is composed of limonene, 4% is citral, and the remaining aromatic components include terpineol and geranyl acetate.
The hue of the lemon oil is pale yellow.[40]

IV. MATERIAL AND METHOD OF PREPARATION

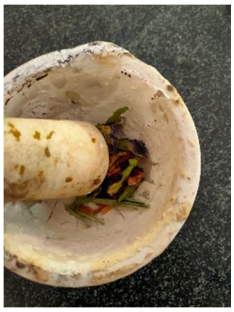
Shankhpushpi	1.5g
Hibiscus	0.5g
Ginger	0.2g
Clove	0.2g
Cinnamon	0.2g
Lemon	0.2g
Lemon Grass	0.2g

Phase 1: Gathering ingredients: The items(Cinnamon, Lemon, Lemon Grass, Clove, Ginger) were bought at Shahada City's market since they were readily available there, Shankhpushapi and hibiscus were authentified botany department of P.S.G.V.P.M's Collage, Shahada.
Phase 2: The second phase involved meticulous cleaning of all the components.
Phase 3: Dehydrating: For two days, separate containers containing cloves, cinnamon, lemongrass, lemon, ginger, and Shankhpushpi and Hibiscus flowers were left in the sun.
Phase 4: Grinding – All of the components, including ginger, cloves, and cinnamon, were dried before being ground into a powder in a jar grinder.

Phase 5: Making Polyherbal Tea Bags: First, we need to prepare empty tea bags using muslin cloth. Next, we weigh the tea bags and add 0.2 grams of cinnamon powder, 0.2 grams of ginger powder, 0.2 grams of lemongrass powder, 0.2 grams of clove powder, 0.2 grams of lemon, 0.5 grams of hibiscus powder, and 1.5 grams of Shankhpushpi powder to them. Then combine all of them and put them inside the tea bag. Seal the tea bag and measure it to ensure that the contents weigh three grams net.


Collection


Dried


Trituration


Prepared Tea


Tea Bag

V. BENEFITS OF POLYHERBAL TEA

1) The Possible Applications of Shankhpushpi for Dementia and Alzheimer's Disease.
2) Shankhpushpi could have neuroprotective potential, meaning that it could improve mental health in some way.[42]
3) Shankhpushpi could have neuroprotective potential, meaning that it could improve mental health in some way.
4) Possible Applications of Shankhpushpi for Depression.
5) Shankhpushpi may have the ability to improve mood in those who take it because of its possible antidepressant properties.[43]
6) Hibiscus may have a hypotensive effect.
7) Hibiscus could aid in lowering blood fat levels.
8) Hibiscus may improve liver function.[44]
9) Compounds in hibiscus may help prevent cancer.
10) Might aid in reducing the development of bacteria.
11) Reduces inflammation and might enhance cardiac health.
12) Deters fungus and bacteria.
13) Cinnamon may lessen other PMS symptoms, including cramping during periods.
14) Cinnamon might decrease acne.
15) Lemongrass might have a diuretic effect.
16) Lemongrass may assist with cholesterol regulation.[45]

VI. RESULT AND DISCUSSION

Organoleptic properties:

1) Colour: Violet
2) Odour: Aromatic
3) Taste: characteristic

Physiochemical Analysis:

- Test for Steriod:

Salkowski reaction

Lieberman burchard reaction

In the steroid test, result were shown that steroid was not present both test.

- Test for Glycoside:

Keller Killani test

Borntrager test

In the glycoside test keller killani test was negative while borntrager test was positive.

- Test for Carbohydrate: (Reducing sugar)

Benedicts test

Fehlings test

In the carbohydrate test for reducing sugar, different results were shown benedicts test was positive while in fehling test shown negative.

- Test for tannins:

Lead acetate test

In the tannins test, lead acetate was negative.

- Test for Flavonoids:

Sulphuric acid test

In the flavonoid test sulphur acid test was negative.

Sr. No.	Name of compound	Result (Positive + , negative -)
1	Alkaloids	+
2	Glycoside	-
3	Reducing sugar	+
4	Tannins	-
5	Phlobotannins	-
6	Anthroquinones	+
7	Saponin	-
8	Terpenoids	+
9	Steroids	-
10	flavonoids	-

VII. CONCLUSION

In summary, the prepared polyherbal herbal tea exhibits antioxidant activity and a phytonutrient content. The resulting herbal tea formulation has potential applications in medicine, including antibacterial and anti-inflammatory effects. Benefits of polyherbal tea include lowering blood pressure, enhancing liver function, lowering blood fat, reducing the growth of bacteria and fungus, preventing cancer, enhancing heart health, reducing acne, and regulating cholesterol. These polyherbal teas strengthen the immune system, increase energy, and benefit the brain.

VIII. ACKNOWLEDGEMENT

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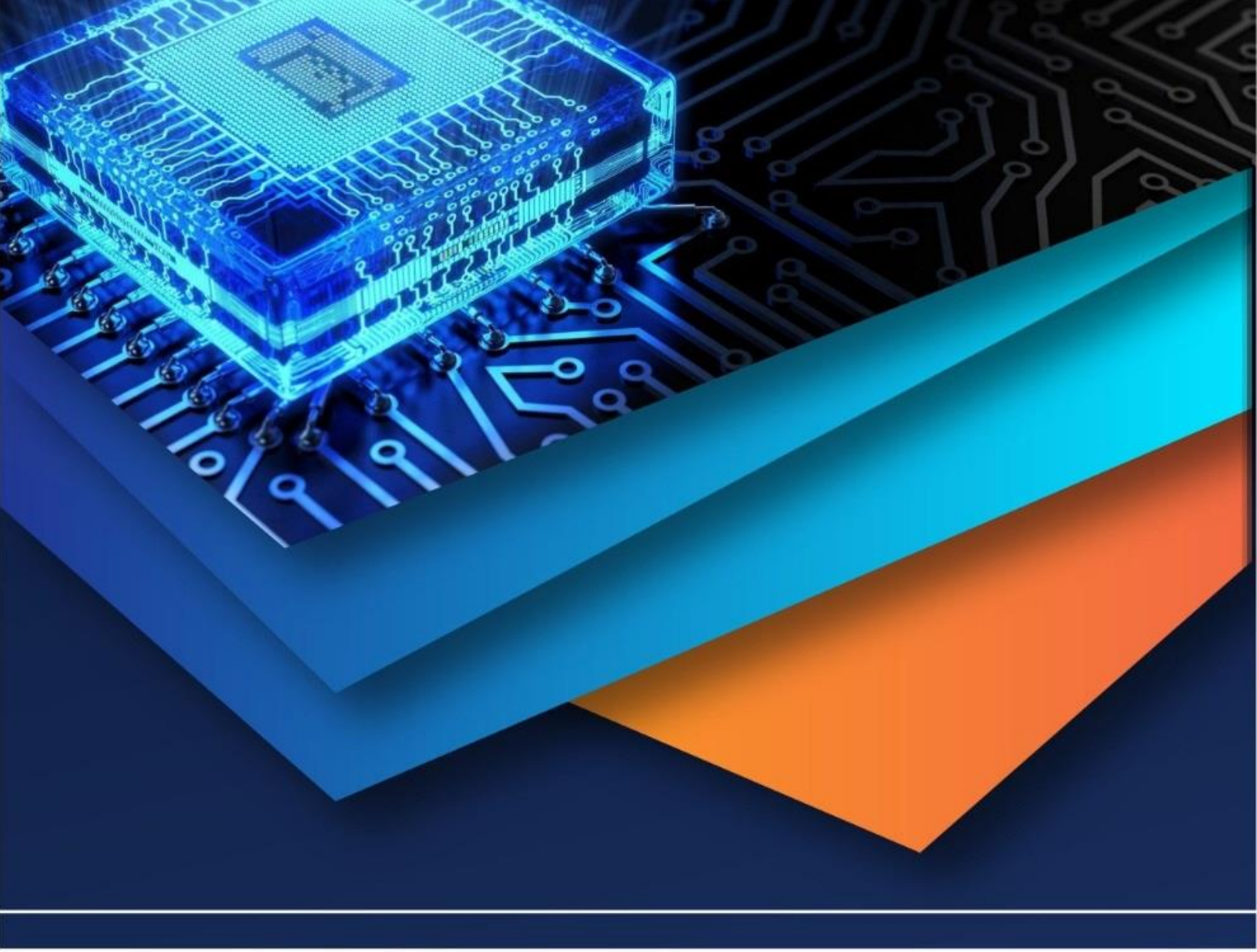

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