



Development Of Stress Relieving Tea Bags & Its Phytochemical Analysis

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Abstract

The main aim of this study was to prepare a stress relieving tea. This tea not only helps in reducing stress, it is also helpful in stress and fatigue relief. In the development of this product, many natural ingredients with therapeutic properties like Green tea, Ashwagandha roots, Ginger roots, Lemongrass leaves, Chamomile flowers, Lavender flowers, Jasmine flowers, were used.

These ingredients were dried and powdered to form tea bags. Two varieties of tea bags were prepared, namely Ashwagandha and Lavender tea bags. The organoleptic properties of these tea bags were assessed using a 9-point hedonic rating test for different attributes like taste, aroma, colour, smell, flavour, etc. The antioxidant analysis was also done to evaluate the presence of different phytochemicals. Ashwagandha tea had more acceptability in terms of different quality attributes and antioxidant content was found to be highest in Ashwagandha tea as well.

Keywords: Herbal tea, Phytochemicals, Stress-reliever, organoleptic properties, Fatigue-reliever, Ashwagandha and Lavender.

Introduction:

Stress Relieving Tea:

Tea is the second most popular beverage in the world and this is not without reason. Tea lovers across the globe testify to its flavourful taste and relaxing benefits. Sitting with friends or family and sipping on a cup of hot tea is the most preferred tea-drinking concept – it's called ritualised relaxation. It is an adaptogen herb, which helps our body to deal with daily stress and balances our body functioning. It also promotes overall immunity, strength, energy and endurance." Adding to this, "It is used to fight depression, anxiety, boost fertility and brain functioning. The combination of Ashwagandha, Chamomile, Jasmine, Lavender, Ginger, lemongrass and green tea not only makes for an engaging and flavourful experience. It also offers the combined nutrients of all remarkable plants. Ashwagandha, Chamomile, Jasmine, Lavender, Ginger, Lemongrass and Green Tea is a natural source of vitamin A, vitamin C and five unique vitamins.

Benefits of Ashwagandha and Lavender:

Ashwagandha:

Chronic stress has been associated with a number of illnesses, including obesity. Ashwagandha is a well-known adaptogen and known for reducing stress and anxiety in humans [1]. The root of the Ashwagandha plant (also known as *Withania somnifera*), has a long history of use as an adaptogen in the Ayurveda system of complementary medicine, and is used to counteract the negative effects of stress. The plant contains a range of bioactive constituents, including withanolides, glycol withanolides, sitoindosides, withering A, and other therapeutically active phytochemicals [2]. Other studies have identified anticancer, antidepressant, anxiolytic, cardio protective, antioxidant, thyroid modulating, immunomodulation, antibacterial, Neuroprotective, antifungal, anti-inflammatory, and hematopoietic activities [3].

Ashwagandha tea aids in easing the signs of long-term stress and anxiety since it functions as an adaptogen to lessen the adverse effects of elevated cortisol levels. Research suggests that taking Ashwagandha can help calm frayed nerves [4]. Ashwagandha is an herb widely used in Ayurveda, a type of medicine based on Indian tenets of natural healing. Perhaps best known for its ability to relieve stress and anxiety, Ashwagandha is gaining popularity as an important herb to enhance overall health and well-being [5].

Ashwagandha is a calming herb, a functional medicine specialist at Henry Ford Health. "It helps balance the stress hormone cortisol, and can be an important tool for people who have a lot of stress, anxiety, and fatigue and brain fog. Ashwagandha (also called Indian ginseng or winter cherry) is a small flowering shrub that grows in India and Southeast Asia. "Ashwagandha" means "smell of the horse," which describes the plant's scent and hints at its function—horses are calming, strong and focused. Extracts or powder from the root and leaves of the Ashwagandha plant are used to treat a variety of conditions. The biologically active components of the Ashwagandha plant's leaves are withanolides, a naturally occurring steroid [6].

Studies suggest that Ashwagandha can promote better sleep quality and help alleviate insomnia. Ashwagandha tea has an earthy, slightly bitter flavour. It's usually said to have a little taste of dirt. The flavour of the tea alone can be a bit overpowering for many people. As a result, buttermilk, honey, and cardamom are frequently added to the tea when serving it [7].

Ashwagandha is a well-known herb with a variety of health benefits. *Withania somnifera* (L.) DuRoi is traditionally referred to as Ashwagandha and is commonly known as Indian ginseng or winter cherry. Ashwagandha is a shrub found throughout the semi-arid region of India and other Southeast Asian countries. [8] The plant is also available in African regions such as Congo, South Africa, Egypt, Morocco, and middle-eastern countries. Ashwagandha, a member of the Salicaceae family, is included in the monographs of medicinal plants identified by the World Health Organization (WHO) [9].

Lavender:

Compounds in lavender work to mimic the role of neurotransmitters, helping to decrease stress levels and reduce anxiety. Lavender tea is a type of herbal tea that is brewed from the flowers of lavender or other plants with a similar flavour. Some people drink it to relax after a long day, or as a form of alternative medicine. It's also been used for centuries in aromatherapy, and some people believe that the scent can reduce anxiety. Lavender tea is made from the fresh or dried buds of the lavender flower known as *Lavandula angustifolia*. It is a type of tea known as an herbal tea or tisane. This plant is native to the Mediterranean region including southern Europe and northern Africa. Lavender tea boasts a distinctive flavour and aromatic fragrance. Lavender tea features hints of rosemary and mint. Some blends offer a smoky or woody flavour while others tend to be more floral and sweet. Lavender tea can also have hints of green apple, rose, and earthy notes similar to those found in green tea [10].

The most well-known health benefit of lavender tea is its ability to induce calm. The relaxing effects of lavender tea can help improve sleep and may be used to treat sleep disorders. According to national institutes of health in the USA including the CDC, an estimated 70 million people suffer from some type of sleep disorder. Lack of sleep has further been correlated with a host of other health problems. Today, the lavender

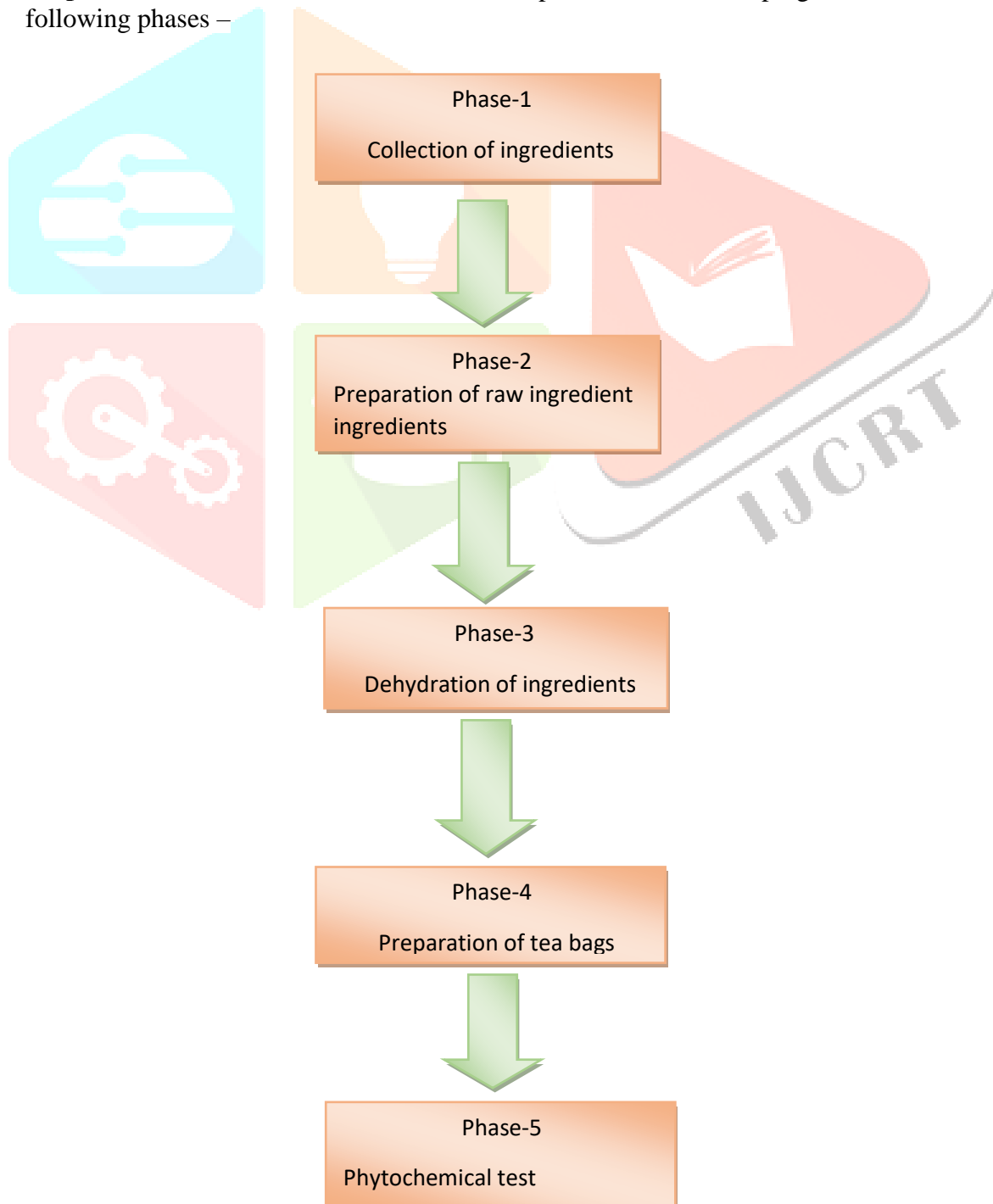
plant is cultivated in the United States and many other countries across the globe. It's commonly found in household gardens and the buds can be used to brew homemade lavender tea[11].

METHODOLOGY

- **Collection of Ingredients:** The ingredients were purchased from the local market of Lucknow City.

Green tea	100 g.
Ashawagandha	50 g.
Lemongrass	50g.
Ginger	50 g.
Lavender	25 g.
Chamomile	25 g.
Jasmine	25 g.

- **Preparation of Herbal teas:**The whole experiment of developing herbal tea was carried in following phases –



- **Phase 1: Collection of ingredients**-The ingredients were purchased from the local market of Lucknow City it is easily available in the market.
- **Phase 2: Cleaning**- All these ingredients were carefully cleaned.
- **Phase 3: Dehydrating**-Green tea, Ashwagandha roots, Ginger roots, Lemongrass leaves, Chamomile flowers, Lavender flowers, and Jasmine flowers, were kept separately in a dehydrator and dried at 100°C for 2 days.
- **Phase 4: Grinding**-After drying all the ingredients, they were put in a grinder jar and made a fine powder.
- **Phase 5: Preparation of stress relieving tea bags**-To make tea bags, we need two empty tea bags, which are easily available in the market or online, then we will weigh the tea bags, then take 0.5 gram Ashwagandha powder, 0.5 gram ginger powder, 0.5 gram lemongrass powder and green tea in it. Will also add 2 grams, after that mix all these together and fill them in the tea bag, after that seal the tea bag and weigh the bag, so that their net weight should be 4 grams. By mixing Lavender powder 0.5, Chamomile 0.5 powder 0.5, Jasmine powder 0.5 and green tea 2 gram, we will make it and seal it, then weigh it also, these tea bags are ready.

➤ **Phase 6: Phytochemical analysis**

Test for tannins: About 0.5g of dried powdered samples was boiled in 20 ml of water in a test in a test tube and then filtered. A few drops of 0.1 % ferric chloride was added and observed for brownish green or a blue – black colouration.

Test for saponin: About 2g of the extract was hydrolyzed with Hydrochloric acid for few hours on a water bath and filtered. 10ml of the filtrate was mixed with 5ml of distilled water and shaken vigorously for a stable persistent froth. The frothing was mixed with 3 drops of olive oil and shaken vigorously, then observed for the formation of emulsion.

Test for Phenol: A small quantity of the extract was dissolved in few ml of water and subjected to FeCl₃ test. The dilute extract was treated with dilute FeCl₃ solution (5%) and appearance of violet colour shows the presence of phenolic compound and tannins.

Test for flavonoids: The extract was treated with concentrated sulphuric acid. Appearance of yellowish orange show the presence of anthocynins, yellow to orange Colour show the flavour, and orange to crimson show the the presence of flavonoids.

Test for alkaloids: A small portion of the alcoholic extract was stirred separately With few drops of dilute Hydrochloric acid and filtered. The filtrate was treated with Dragandroff's reagent. Appearance of organic precipitate shows the presence of Alkaloids.

Caffeine tests:For caffeine testing, both the samples and calcium carbonate powder were put in separate beakers and sufficient amount of distilled water was mixed well with the help of a glass rod, then it was heated in mantle heating for 20 minutes at 80°C. Boiled, then it was filtered by applying filter paper in the funnel so that powder and leaves are not mixed in it, then 10 ml of chloroform solution was put in a separating funnel and the sample was shaken well after adding it, then the gas formed in it. It was released to see whether the chloroform has turned green or not, if it has happened, then the chloroform was separated in a small beaker and heated for a while, after a few minutes small-small crystals were found in it, then in it. After adding 2 ml distilled water and a little charcoal powder, it was heated again, then it was separated with the help of filter paper and the water was evaporated by heating it. Then 10 ml of alcohol was added and heated in mantle heating so that the alcohol also evaporates, after that some crystals appeared in it and on zooming in it showed the shape of a needle. After doing this test, it was found that caffeine is present in both samples.

- **Antioxidant test by DPPH:** The antioxidant activity of 2, 2- Diphenyl-1-Picrylhydrazyl (DPPH) is calculated via spectrophotometer (Tekao et al.1994) with small modifications (Kumarasamy et al. 2007). In methanol, the colour of DPPH is dark blue. In its reduced form, the antioxidant compound changes colour from purple to yellow, allowing DPPH to gain electrons. DPPH shows strong absorption at 517 nm, determined by 2,2- diphenyl-22-pyridyl hydroxylase (DPPH). Briefly, 0.1ml DPPH Solution was mixed with 1ml of extract powder prepared in various concentration (20, 40, 60, 80,100ml). A control sample of 1 ml of methanol was prepared and incubated in darkroom for 30 minutes at visible spectrophotometer methanol use as a blank. Reduction in the absorbance value shows high activity in scavenging free radicals (Zubeyir et al. 2017).

Result and Discussion

- **Phytochemical analysis**

Tannin Test:



Ashwagandha



Lavender

In the tannin test, different results were shown in both the samples like Ashwagandha tea tannin was present but lavender tea was found to be negligible.

Saponin Test:



Ashwagandha



Lavender

In the Saponin Test, foam was stable in both the samples, which showed that Saponin is present in it.

Phenol test:



Ashwagandha



Lavender

In the tannin test, different results were shown in both the samples like Ashwagandha tea phenol was not present but lavender tea was found to be negligible.

Flavonoids test:



Ashwagandha



Lavender

After flavonoids test, the results of both the samples were different.

Alkaloids test:



Ashwagandha



Lavender

After testing Alkaloids, the results were positive in Ashwagandha and negative in Lavender.

Caffeine Test:



Ashwagandha



Lavender

Many methods like mixing with distilled water, boiling, and sample mixing with chloroform, separating chloroform from sample in a beaker and again boiling were used for caffeine test, which showed that caffeine is present in both the samples.

Substance	Ashwagandha	Lavender
Tannins	-	+
Phenols	-	+
Saponin	+	+
Flavonoids	-	+
Alkaloids	+	-
Caffeine	+	+

Note: + indicates presence & - indicates absence

Through this table came to know that in which phytochemical test was present and in which it was absent Tannin was absent in Ashwagandha and was present in Lavender Phenol was also absent in Ashwagandha and was present in Lavender Saponin was present in both Ashwagandha and Lavender Flavonoids were absent in Ashwagandha and present in Lavender. Alkaloids were present in Ashwagandha but absent in Lavender. Caffeine was present in both Ashwagandha and Lavender.

- **Antioxidant Test using DPPH:**

The DPPH scavenging activity when the sample's absorbance of three samples were measured using a UV spectrophotometer at 512nm with the methanol used as a black. The sample with 1 ml of the control sample of methanol showed 0.964 absorbance when measured at 517 nm using a UV visible spectrophotometer. The second sample with 2ml of the control sample of methanol showed 0.420 absorbance and the third sample with 3ml of the control sample of methanol showed 0.647 absorbance at 517nm.



Ashwagandha



Lemongrass

The antioxidant test was done by DPPH which showed that antioxidant properties are present in both Ashwagandha tea and lavender tea.

CONCLUSION:

This study found the increased activity of glutathione, catalase and SOD – the body's most powerful antioxidants. It is concluded that lavender has antioxidant activity and helps prevent or reverse oxidative stress and anxiety. This study has shown the phytochemicals analysis and antioxidant properties. Phytochemical and Antioxidant analysis revealed that these are a stress reliever, these are immunity booster, power booster, good for brain, it is found that Ashwagandha and Lavender tea has good amount of antioxidant properties which are beneficial for health. The results have shown that Ashwagandha powder is having more antioxidant properties as compared to Lavender powder.

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