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Research Article

Stress Relieving Ashwagandha Tea Bags with Sunflower Seeds

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ABSTRACT

Stress is a growing global health concern, and natural remedies like Ashwagandha are gaining popularity for their adaptogenic and calming properties. Ashwagandha tea bags, formulated using the roots of *Withania somnifera* (Ashwagandha) and sunflower seeds, offer a caffeine-free, herbal approach to stress reduction. The key bioactive compounds—sitoindosides and acylsteryl glucosides—act as anti-stress agents by modulating cortisol levels, enhancing mood, and promoting restful sleep. The earthy flavor of Ashwagandha tea is often enhanced with natural sweeteners for improved palatability. The maximum recommended daily dose of Ashwagandha is 1000 mg. This study aims to raise awareness of the therapeutic benefits of Ashwagandha tea, emphasizing its role as a natural mood stabilizer, cognitive enhancer, and safe alternative to synthetic stress relievers. Formulating Ashwagandha into tea bags represents a novel and convenient method of herbal drug delivery, providing a simple yet effective means to manage stress and support mental well-being.

INTRODUCTION

Ashwagandha tea is a natural remedy that combines the stress-relieving properties of Ashwagandha with the nutritional benefits of sunflower seeds. This unique blend may help alleviate symptoms of chronic stress and anxiety, promoting relaxation and overall well-being. Research suggests that Ashwagandha can calm the nervous system, reducing feelings of anxiety and stress. [(1)] The potential benefits of Ashwagandha tea includes Reduced cortisol levels and stress response, Improved sleep quality and relaxation, Enhanced cognitive function and mood, Anti-inflammatory and antioxidant properties [(2)] Ashwagandha's adaptogenic properties may help the body adapt to stress, mitigating the negative effects of elevated cortisol levels. This herbal remedy has been used for centuries in Ayurvedic medicine to promote overall well-being and relaxation. [(3)] The human body's stress response is a complex physiological reaction that involves multiple systems and pathways. When a stressor is

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perceived, the hypothalamus, a crucial region in the brain, triggers a cascade of reactions that ultimately lead to the release of stress hormones like cortisol and adrenaline. The hypothalamic-pituitary-adrenal (HPA) axis plays a vital role in regulating the body's response to stress. Upon activation, the HPA axis stimulates the adrenal glands to release cortisol, which in turn affects various bodily functions. [4] The stress response is characterized by increased heart rate, blood pressure, and blood glucose levels, as the body prepares to respond to the perceived threat. Conversely, non-essential functions like digestion and reproduction are suppressed, allowing the body to redirect energy towards the stress response. The hypothalamus detects a stressor and sends signals to the pituitary gland. The pituitary gland activates the HPA axis, leading to the release of cortisol and other glucocorticoids, Cortisol, a primary stress hormone, regulates various physiological processes, including metabolism, immune response, and brain function. [5] By understanding the intricacies of the stress response, we can gain insights into the complex interplay between the brain, body, and environment. [6] The pituitary gland, often referred to as the "master gland," is a small endocrine gland located at the base of the brain. It regulates various bodily functions, including growth, metabolism, and reproductive processes, by producing hormones that stimulate or inhibit the production of hormones in other endocrine glands.[7] The adrenal glands, located on top of the kidneys, produce hormones that help regulate stress response, blood pressure, and electrolyte balance.[8]) The pituitary gland and adrenal glands are closely linked through the hypothalamic-pituitary-adrenal (HPA) axis, which regulates the body's response to stress. The pituitary gland stimulates the adrenal glands to produce cortisol and other glucocorticoids, enabling the body to respond to stress. This intricate relationship highlights the importance of these glands in maintaining overall physiological balance and health. [9]

1. MATERIAL AND METHOD

Material Required:

Ashwagandha roots, ginger, Cardamon, Sunflower seeds.

Methodology:

1. Ingredients Preparation

- Ashwagandha roots are cleaned, dried, and powdered.
- Sunflower seeds are roasted, cooled, and ground into a fine powder.
- Ginger powder and Cardamon powder prepared.

2. Grinding

- Ashwagandha powder, ginger and cardamon and sunflower seed powder are blended and grind in a specific ratio. (optimized through iterative testing)

3. Tea Bag Preparation

- Tea bags are designed and prepare.
- The blended powder is filled into the tea bags.

Formulation Table

Table 1: Formulation Table

Sr. No	Ingredients	Function	F1 (2 gm)	F2 (2gm)
1	Ashwagandha	Relive from stress and anxiety	1 gm	1.3 gm
2	Sunflower seeds	Immunity booster	0.5 gm	0.2 gm
3	Ginger	Relief from cold and flu	0.25 gm	0.25 gm
4	Cardamon	Impart Flavour	0.25g	0.25 gm

4. Evaluation Test

Organoleptic Evaluation

Organoleptic evaluation is a scientific method used to assess and measure the sensory characteristics of a product, including:

- Appearance: visual aspects such as colour, shape, and clarity.
- Aroma: the smell or fragrance of the product.
- Taste: the flavour profile, including sweetness, bitterness, and other taste attributes.
- Texture: the tactile sensations experienced when consuming the product, such as smoothness or roughness. [10]

Figure 1: Tea powder

Physical Evaluation

❖ Ash Value

Ash content analysis is a method used to quantify the inorganic residue in a sample. Ash value is a critical parameter in herbal tea formulations, including those with ashwagandha. It measures the amount of inorganic residue remaining after incineration, indicating the presence of contaminants like silica or other minerals. [11] . A lower ash value suggests higher purity and fewer impurities. It helps manufacturers detect potential adulterants or contaminants, ultimately impacting the product's efficacy and consumer trust. [12]

Figure 2: Ash

❖ Moisture Content

Moisture content is the amount of water present in a substance. It's typically expressed as a percentage of the total weight. Moisture content affects product quality, stability and shelf life. It's crucial in industries like food, pharmaceuticals and materials science. Accurate measurement and control are essential. [13] The moisture content of tea bags plays a significant role in maintaining their overall quality. Controlling moisture levels helps prevent the growth of microorganisms, ensuring the product remains stable and safe for consumption. Additionally, optimal moisture

content preserves the flavour, aroma, and nutritional properties of the tea. Generally, herbal tea bags should have a moisture content below 10% to meet quality standards. Regular monitoring of moisture levels is essential to guarantee product safety and consistency. [14]

Moisture Content Formula,

Moisture Content (%) = ((Initial weight – Final weight) / Initial weight) × 100

Where,

Initial weight - Weight of sample before drying.

Final weight = Weight of sample after drying.

Figure 3: Hot air Oven

❖ **pH Test**

pH (Potential of Hydrogen) is a measure of the acidity or basicity (alkalinity) of a solution. It is a scale used to specify the concentration of hydrogen ions (H+) in a solution. [16]

Table 2: pH Scale

Sr. No	pH scale	Inference
1	pH 0-6.9	Acidic
2	pH 7	Neutral (neither acidic nor basic)
3	pH 7.1-14	Basic (alkaline)

Figure 4: pH Meter

Solubility Test: Solubility is the maximum amount of a substance (solute) that can dissolve in a given amount of solvent at a specific temperature and pressure, forming a homogeneous solution. It's typically expressed in terms of concentration, such as milligrams per millilitre (mg/mL) or moles per Liter (mol/L). Solubility is a critical property in various fields, including pharmaceuticals, chemistry and materials science. [17]

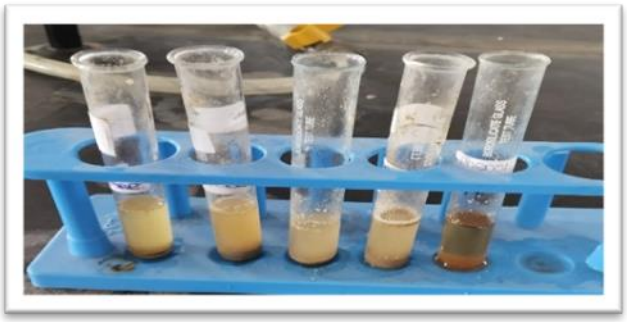

Figure 5: Solubility of tea powder in various solvent

❖ Disintegration Test

The disintegration test for tea bags assesses how quickly the tea bag breaks apart and releases its contents when immersed in hot water. This test is important for ensuring the tea bag's functionality and the optimal release of flavours and active ingredients. [18]

Figure 6: Disintegration Time of Tea Bags

Microbiological Analysis

➢ Total Bacterial Count:

Total Bacteria Count (TBC) measures the number of bacteria in a sample. It's used to evaluate cleanliness and safety in various contexts, such as water, food, and environments. The count is usually expressed in colony-forming units (CFU). [19]

Total Bacterial Count (TBC) is essential for tea bags to ensure product safety and quality. It helps detect potential contamination, spoilage, or presence of harmful microorganisms. [20]

Figure 7: Prepared Culture Media

Figure 8: Bacterial Coloies

5. RESULTS

Organoleptic evaluation

The organoleptic evaluation of the Ashwagandha tea blend reveals a consistent and appealing profile. The colour is described as tan and beige, which suggests a natural and earthy appearance, likely due to the presence of Ashwagandha and other herbal ingredients. The odour is characterized as nutty and slightly earthy, which is consistent with the expected aroma of the ingredients. The taste is reported as similar to tea,

indicating a pleasant and familiar flavour profile. Overall, the organoleptic properties of the Ashwagandha tea blend are consistent with its natural ingredients and suggest a high-quality product.

Table 3: Organoleptic Character

Sr. No	Organoleptic Character	F1	F2
1	Colour	Tan and beige	Tan and beige
2	Odour	Nutty and slightly Earthy	Nutty and slightly Earthy
3	Taste	Taste like Tea	Taste like Tea

Physical Evaluation

Ash Value

The calculated ash value of 45% indicates a substantial presence of inorganic minerals in the sample. This suggests that nearly half of the sample's weight consists of non-volatile compounds that remain after incineration. Formulation 2 has an ash value of 25%, while Formulation 1 has an ash value of 45%. The lower ash content in Formulation 2 indicates fewer inorganic impurities.

Table 4: Physical Evaluation

Physical Evaluation	F1	F2
Ash value	45%	25%

Moisture Content

The moisture content is 40%.

The sample's moisture content is 40%, indicating a substantial amount of water presence. This could affect its physical properties, stability, and potential uses. Depending on the sample's intended application, this level of moisture may be significant and warrant further consideration. The 2nd formulation's 42% moisture content may impact its shelf life, texture, and stability, requiring careful storage and packaging to maintain product quality, and potentially affecting its consistency and overall performance over time.

The sample's physical properties are notable. Its pH value of 5.12 indicates slight acidity. In terms of solubility, the sample dissolves well in water, is partially soluble in phenol, and slightly soluble in alcohol and ethanol. Additionally, the sample breaks down quickly, disintegrating in just 1 minute.

Table 5: Physical Evaluation

Physical Evaluation	F1	F2
Moisture content	40%	41%

Total Bacterial Count

The total bacterial count of 6 CFU indicates a low bacterial load, suggesting good microbial quality. This result implies that the sample has minimal microbial contamination, which is desirable for various applications.

Table 6: Microbiological Evaluation

Microbiological Evaluation	F1	F2
Total Bacterial Count	6 CFU	5 CFU

6. CONCLUSION

Ashwagandha tea bags with sunflower seeds offer a promising herbal remedy for stress relief, anxiety reduction, and inflammation mitigation. The adaptogenic properties of Ashwagandha, combined with the anti-inflammatory effects of sunflower seeds, create a unique and potentially powerful tea bags. Further research is needed to fully understand the effects of this tea bags on

human health. The available evidence suggests that Ashwagandha tea bags with sunflower seeds may be a useful adjunct to traditional therapies for stress relief, anxiety reduction, and inflammation. [23] This Ashwagandha tea blend is a unique combination of Ashwagandha, sunflower seeds, ginger, and cardamom. Ashwagandha, an adaptogenic herb, helps the body cope with stress and promotes relaxation. Sunflower seeds add a boost of nutrition, rich in healthy fats, protein, and vitamins. Ginger and cardamom contribute to the tea's flavour and digestive benefits. Ginger has natural anti-inflammatory properties and can aid in digestion, while cardamom adds a soothing and aromatic flavour. Together, these ingredients create a harmonious blend that may support overall well-being. [24].

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