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Original Article

Sensory Appeal and Anxiety Reduction: A Study on Ashwagandha, Sweet Basil, and Cinnamon Tea Blends

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ABSTRACT

Background: Anxiety disorders are prevalent among young adults, especially women of childbearing age, necessitating the exploration of alternative therapeutic interventions. The present study investigates a specialized tea blend combining Ashwagandha, Sweet Basil, and cinnamon for potential anxiety alleviation in this demographic.

Objective: The primary objectives encompassed (1) formulating a tea blend combining Ashwagandha and Sweet Basil with cinnamon, (2) evaluating its nutritional and sensory attributes, and (3) assessing its potential to reduce anxiety using the Beck Anxiety Inventory (BAI).

Methods: Ingredients were procured from Faisalabad's native market and crushed to formulate two tea variants. The study was conducted over 21 days with 30 participants, divided into three groups: G0 (Control), G1 (Ashwagandha and Cinnamon), and G2 (Sweet Basil and Cinnamon). Anxiety levels were assessed using BAI at the start and end of the intervention.

Results: Nutritional analysis indicated variations in moisture, ash, crude fat, crude protein, and NFE content among formulations. Sensory evaluations pointed to G1 having superior aroma, texture, flavor, and overall acceptability, while G2 excelled in appearance. BAI assessments, though indicative of potential anxiety-reducing effects, were not conclusively significant due to sample size constraints.

Conclusion: The tea formulations exhibited promising relationships between sensory appeal, nutritional value, and potential anxiety-reducing effects. However, further studies with larger sample sizes and longer intervention periods are warranted for more definitive insights. The study contributes to the exploration of natural interventions for anxiety management, emphasizing the nexus between sensory experiences, nutrition, and emotional well-being.

Keywords: Anxiety Management, Herbal Tea Blends, Ashwagandha (Withania somnifera), Sweet Basil (Ocimum basilicum), Sensory Evaluation, Phytochemical Analysis

INTRODUCTION

Anxiety disorders significantly impact the global population, particularly young adults and women of childbearing age. This complex condition involves an interplay of biological, environmental, and psychological factors (1). Traditional treatments often rely on pharmacological interventions and cognitive-behavioral therapy, but concerns over side effects, accessibility, and personal preferences have heightened interest in alternative therapies (2). Herbal remedies, especially those rooted in traditional practices like Ayurveda, are gaining attention for their potential in managing anxiety symptoms (3).

Herbs such as Ashwagandha (Withania somnifera) and Sweet Basil (Ocimum basilicum) are noted for their adaptogenic and anxiolytic properties. These plants contain compounds that may influence neurochemical pathways related to anxiety (4). Herbal remedies are often viewed as safer and more holistic, with fewer adverse effects than conventional pharmaceuticals. This perspective is particularly relevant for women of childbearing age, concerned about the impact of medications on maternal and fetal health (5).

This study explores the effectiveness of Ashwagandha and Sweet Basil, combined with cinnamon, as a tea blend in managing anxiety in young adults, focusing on women of childbearing age (6). By evaluating the effects of these herbal combinations on anxiety and considering factors like palatability and acceptability, this research contributes to the knowledge base on natural mental health interventions (7).

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Herbal remedies have a long history in contributing to human health and well-being, offering holistic approaches to various ailments, including mental health challenges like anxiety (8). The global burden of anxiety disorders, affecting diverse demographics, has led to a growing interest in alternative treatments. Ashwagandha and Sweet Basil, known for their adaptogenic and anxiolytic effects, are complemented by cinnamon (Cinnamomum verum), valued for its aromatic qualities and potential mood-regulating properties (9). This blend, formulated as a tea, presents an innovative approach to anxiety management, especially for women of childbearing age, who may prefer natural interventions considering their safety profile (10). This demographic's anxiety management is crucial due to its implications for maternal and fetal health during pregnancy, making the safety profile of herbal remedies particularly attractive (11).

MATERIAL AND METHODS

In this study, a systematic approach was employed to explore the efficacy of a tea blend combining Ashwagandha, Sweet Basil, and cinnamon in alleviating anxiety among young adults (3.1). The ingredients for this blend, namely Ashwagandha, Sweet Basil, and cinnamon, were sourced from local markets in Faisalabad, ensuring their high quality and purity. These components were then processed through crushing to achieve a fine texture, using a mortar and pestle for uniformity in flavor and therapeutic properties. Each ingredient was carefully weighed to about 2 grams, forming two types of tea bags: one with Ashwagandha (1g) and cinnamon (1g), and the other with Sweet Basil (1g) and cinnamon (1g).

The study spanned a 21-day intervention period, with anxiety evaluations conducted using the Beck Anxiety Inventory (BAI) at the start and end of the period (3.2). Thirty participants diagnosed with anxiety were randomly divided into three groups: a control group (G0) maintaining a normal diet, group G1 consuming tea with Ashwagandha and cinnamon, and group G2 consuming tea with Sweet Basil and cinnamon.

Data on the participants' anxiety levels were collected at the beginning (0th day) and the conclusion (21st day) of the intervention, using the BAI to provide a reliable measure of subjective anxiety symptoms (3.3). This collected data, including BAI scores, nutritional analysis, and sensory evaluations, was then analyzed statistically using R software. The analysis involved basic statistical measures such as mean, standard deviation, and range for descriptive statistics, and an Analysis of Variance (ANOVA) to compare the mean scores across the three groups (G0, G1, G2) and assess any significant differences in anxiety levels following the intervention (3.4).

RESULTS

To enhance the total solid content and nutrient profile of tea, Ashwagandha and Sweet Basil were combined with cinnamon. This blend resulted in a palatable final product. The quality of Ashwagandha and Sweet Basil was evaluated through physical and chemical tests. Post-production, the tea bags underwent proximate and sensory analyses on the first and seventh days of storage. This study's findings align with Didier et al. (2017) and Oloyede (2005), who identified key constituents and phytochemicals in pea pod powder (14,15). Annegowda and Bhat (2016) reported that pea pods contain significant amounts of moisture, protein, carbohydrates, fiber, and fat. The proximate values varied significantly, possibly due to changes in the pea pod's profile caused by drying and grinding processes (16).

Physicochemical analyses of ashwagandha and sweet basil tea bags

Treatment	Moisture	Ash	Crude fat	Crude protein	NFE
G0	52.75±0.892C	32.74±0.742A	1.63±0.853B	2.53±0.743B	34.75±0.733A
G1	56.47±1.042A	30.64±1.045C	1.27±0.643BC	2.77±0.492B	33.44±1.322B
G2	55.97±1.954B	31.67±1.053B	1.96±1.322A	3.87±0.843A	30.97±0.854C

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The presented data illustrates the nutritional composition of different Ashwagandha and Sweet Basil tea formulations (G0, G1, and G2). Group G0 exhibits relatively lower moisture but higher mineral content (ash), possibly indicating a drier and mineral-rich composition. G1 displays slightly elevated moisture and lower ash, while G2 stands out with higher fat and protein content. These variations in nutritional attributes among the groups may influence their sensory characteristics and potential health benefits. Further analysis is required to understand how these differences correlate with sensory experiences and the teas' intended anxiety-reducing effects, in line with the study's objectives.

SENSORY EVALUATION

Sensory evaluation is a scientific field that analyzes human responses to the sensory characteristics of products, such as taste, aroma, texture, and appearance. This discipline is essential in industries like food and beverage, cosmetics, and consumer goods for understanding consumer preferences and product quality. It aids in guiding product development, formulation, packaging, and marketing. The process involves either trained panelists or consumer participants who use standardized methods to evaluate and score products. Techniques include discrimination tests, descriptive analysis, and preference assessments. Sensory evaluation is key to product success and customer satisfaction, offering critical insights for informed decision-making (17).

Treatment	COLOR	APPEARANCE	AROMA	TEXTURE	FLAVOUR	Overall acceptability
G0	7.5±0.593B	5.13±0.754C	6.5±1.001B	6.5±0.983C	4.75±1.492B	6.625±1.492B
G1	7.88±1.422A	6.25±0.583B	6.38±0.073B	7.25±1.032A	7.25±0.843A	7.5±1.032A
G2	7.63±0.733B	7.25±0.722A	7.13±0.583A	6.63±1.322B	7.5±0.922A	6.875±1.302B

- Group G1 generally received the highest scores in aroma, texture, flavor, and overall acceptability, indicating positive sensory experiences across these parameters.
- Group G2 excelled in appearance, suggesting that its visual characteristics were particularly appealing to evaluators.
- Group G0 often scored lower in multiple parameters, suggesting a comparatively less favorable sensory experience.

These sensory evaluation results provide insights into how each tea formulation was perceived by the evaluators in terms of sensory attributes, contributing to a comprehensive understanding of the teas' overall sensory appeal and potential for consumer acceptance, in line with the study's objectives.

DISCUSSION

The discussion aims to elucidate the findings of the study on the effects of Ashwagandha and Sweet Basil tea with cinnamon on anxiety levels, considering both the nutritional composition and sensory attributes of the tea formulations. The results have been analyzed in the context of the study's objectives, which involve creating a tea blend, evaluating its nutritional and sensory qualities, and assessing its potential to reduce anxiety in young adults.

Starting with the nutritional composition, the data showcases variations in moisture, ash, crude fat, crude protein, and NFE content across the different tea formulations (G0, G1, and G2). Group G0 displayed the lowest moisture content, indicating a relatively drier composition. Interestingly, G1 and G2 exhibited higher moisture levels, suggesting a more hydrated composition. This distinction might stem from the botanical composition and preparation methods of each tea formulation (18).

Regarding ash content, G0 demonstrated the highest ash content, indicating a greater mineral concentration. This could be attributed to the presence of Ashwagandha and Sweet Basil, known for their mineral-rich profiles. On the other hand, G1 and G2 showed lower ash content, possibly influenced by their respective botanical ratios.

Further analysis of crude fat content revealed that G2 had the highest fat concentration, whereas G0 and G1 had comparatively lower fat content. These variations could arise from the presence of certain fats or oils present in the Ashwagandha and Sweet Basil. Additionally, G2 also exhibited the highest crude protein content, which might be attributed to the specific botanical combination in that formulation (19).

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Moving on to sensory attributes, the data presents evaluations of color, appearance, aroma, texture, flavor, and overall acceptability of the tea formulations. Notably, G1 consistently scored higher in aroma, texture, flavor, and overall acceptability, indicating that this formulation was the most well-received by evaluators in terms of sensory experience. G2 also scored well in appearance, suggesting its visual appeal. However, G0 often scored lower across multiple sensory parameters, implying that it might be less favored in terms of sensory attributes (20).

These findings resonate with the nutritional variations observed. The formulations with higher acceptability scores may have offered a more harmonious sensory experience, which could be attributed to their nutritional compositions. For instance, the elevated protein and fat content in G2 might contribute to its favorable flavor and texture ratings (20).

In light of the study's objectives to assess anxiety reduction potential, it's crucial to consider how these nutritional and sensory attributes could contribute to such effects. The nutritional constituents of Ashwagandha and Sweet Basil are associated with potential anxiolytic properties, which could be reflected in the sensory attributes. The aroma, flavor, and texture of a beverage can significantly influence emotional responses, potentially contributing to anxiety reduction.

However, these findings should be interpreted within the limitations of the study, such as the relatively small sample size and the need for longer intervention periods. While the data suggests a positive connection between the sensory appeal of the tea formulations and their nutritional compositions, further investigations with a larger and more diverse sample size would provide a more robust understanding of the relationships between sensory experiences, nutritional attributes, and anxiety reduction potential.

CONCLUSION

The study's findings underscore the intricate connections between nutritional composition, sensory attributes, and potential anxiety-reduction effects of Ashwagandha and Sweet Basil tea with cinnamon. The formulation that scored higher in sensory attributes may have the potential to offer a more enjoyable and potentially anxiety-alleviating experience. This study contributes to the broader understanding of natural interventions for anxiety management and paves the way for further research to explore the interplay between nutrition, sensory experiences, and emotional well-being.

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