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Comparative Effect of Ashwagandha and Basil Seed Tea Bags in Females Suffering from Anxiety

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ORIGINAL ARTICLE

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ABSTRACT

Background: Anxiety and depression are significant mental health conditions affecting an estimated 20% to 40% of women of childbearing age.
Objective: To assess the comparative effect of ashwagandha and basil seed tea bags in females suffering from anxiety by using Beck Anxiety Inventory (BAI).
Methods: This study was conducted in females of child bearing age suffering from moderate or severe anxiety. Twenty females aged 20 to 27 years were selected from Tehsil Faisalabad and non-randomly distributed into two groups. The BAI was administered to all participants before intervention to screen for initial anxiety levels, and at day 30 and 60 after intervention to assess the effect on anxiety symptoms. Anxiety was classified as mild (BAI 8–15), moderate (BAI 16–25) and severe (BAI 26–63) anxiety. Then, the participants received either ashwagandha or basil seeds tea bags (once daily) for four weeks.
Results: Mean of participant's age was 24.05±2.01 years. Among study participants, 70% were urban area, 50% were from middle class, 40% were graduates, and 70% had a family history of anxiety. Percentage of underweight was 35%, normal weight 20%, overweight 35%, and obese 10%. Compared to basil seeds, ashwagandha had a greater impact on anxiety symptoms including numbness or tingling (P=0.001), feeling hot (P=0.020), wobbliness in legs (P=0.018), fear of worst happening (P=0.020), heart pounding or racing (P=0.031), unsteady (P=0.012), hands trembling (P=0.019), fear of losing control (P=0.014), difficult breathing (P=0.023), indigestion or discomfort in abdomen (P=0.010), faint (P=0.005), face flushed (P=0.046) and sweating (not due to heat) (P=0.028).
Conclusion: Nutritional and herbal supplements appear to be an effective strategy to treat anxiety and anxiety-related problems without the risk of adverse side effects. Both, Ashwagandha and basil seeds, helped relived the symptoms of anxiety but ashwagandha showed greater improvement.

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Introduction

Anxiety is defined as the feeling of unease such as fear or worry that can be mild or severe [1]. Earlylife stress in particular has been linked to the onset and progression of anxiety and depressive disorders. The American Psychological Association (APA) defines anxiety as an emotion characterized by feelings of tension, worried thoughts, and physical changes like increased blood pressure [2]. Anxiety disorders form a category of mental health diagnoses that lead to excessive nervousness, fear, and worry [3].

A major concern in public health is psychological disorders. The people are among the most frequent groups of psychiatric diseases in Western nations, where they are also an important factor leading to disability and have significant personal and societal costs. Additionally, anxiety often coexists with other illnesses, aggravating symptoms, delaying healing [4], and raising the chance of developing further mental illnesses like depression and alcoholism. Even when signs of anxiety may not match the standards for a condition, they can nonetheless result in misery andpoor health [5].

However, we still have a limited grasp of the indications and signs of anxiety, and treating anxiety disorders is difficult for mental health [6]. Current pharmacological therapies frequently have unfavorable side effects in addition to subpar efficacy [7]. This issue serves as a good example of the challenges faced by translational research, which has had trouble utilizing a variety of newtechnologies to create effective medicines [8]. It also somewhat alluded to the difficulty of creating animal models of psychotic illnesses [9].

Even though ensuring innovative therapies derived from research on animals frequently prove insufficient in humans and none of them have significantly improved the recent arsenal of anxiolytic drugs, which has been stale for several decades, animal models of anxiety do offer significant knowledge into fundamental defense-survival techniques [6]. Ultimately, this bleak picture points to the necessity of an unconventional integrative study plan to enhance the interaction between basic science and applied science [10].

Methodology

A quasi-experimental study was conducted in Faisalabad for a period of 60 days. Twenty females of age 20-27 years suffering from moderate and severe anxiety were selected through purposive sampling technique in study. Females suffering from known allergies, malabsorptive disease, or other chronic conditions were also excluded, along with pregnant and lactating women.

Beck Anxiety Inventory (BAI) tool was used for collection of data. BAI comprises of 21 items and is designed to determine how intense the patient's anxiety level is. The BAI items are scored on a scale between 0 and 3 and have a maximum score of 63. Total score (0–63), where Minimal Level of Anxiety (0–7), Mild Anxiety (8–15), Moderate Anxiety (16–25), Severe Anxiety (26–63) [10]. The anxiety levels of participants were accessed using BAI tool before selected for study. Females having BAI score of moderate anxiety (16–25) and severe anxiety (26–63) were recruited in this study.

After selection of eligible participants, they were randomly allocated into two groups, group A and group B. 10 participants were added in each group. Group A was provided with Ashwagandha tea bags and group B was given basil tea bags. After crushing, ashwagandha and basil were weighed about 2gm and then 2 different tea bags were made, one was the ashwagandha and cinnamon and the second was sweet basil. The participants were instructed to consume the one tea bag daily for four weeks. It was ensured that the treatment duration is consistent for all participants. The test was done using BAI tool at 0, 30th and 60th day of study. Table 1 shows the treatment plan for our research.

Table 1. Treatment Plan

Group	Subjects	Treatment	Frequency
A	10	Ashwagandha (2g)	One tea bag/day
B	10	Sweet basil (2g)	One tea bag/day

After collecting the data, data were analyzed and tabulated using SPSS.

Various statistical methods including descriptive analysis, Chi-square test, Mean and standard deviation for quantitative variables and Qualitative variables were reported using frequencies and percentages. A p-value <0.05 was considered significant.

Results

The participants were asked about some personal information before the provision of intervention. It helped in a good and trustful communication between the researcher and participants throughout intervention. This information included age, education, BMI, demographic profile, socioeconomic status, demographic profile and family history of anxiety. These are also some of the variables that could make an individual prone towards anxiety.

Table 2: Demographic profile of Participants

Variable		n	%
BMI	Underweight	7	35
	Healthy	4	20
	Overweight	7	35
	Obese	2	10
Demographic location	Urban	14	70
	Rural	6	30
Socioeconomic status	Low	6	30
	Middle	10	50
	High	4	20
Education	Undergraduate	6	30
	Graduate	8	40
	Post graduate	6	30
Family history of anxiety	Yes	14	70
	No	6	30

Mean of participant's age was 24.05±2.01 with minimum and maximum age of 21 and 27 years respectively. Percentage of underweight and overweight females was equal i.e. 35% whereas 20% female were healthy. 70% participant's belonged from urban areas. Majority of the female belonged from middle class i.e. 50%. Education of 40% of females were graduates and 70% females showed the family history of anxiety as shown in Table 2.

Table 3 shows chi square value that depicts the association between beck anxiety variables and Ashwagandha and basil tea bags. The association of variables from variable BAI1 to BAI10 has been displays in Table 3a. The study found that ashwagandha tea bags have a positive effect on several variables, including feeling hot, unable to relax, fear of worst happenings, dizziness, heart pounding, unstable, terrified, and nervous. The chi-square values for BAI2 (feeling hot) are 10.78, BAI3 (11.876), BAI4 (unable to relax), BAI5 (fear of worst happenings), BAI6 (dizziness), BAI7 (heart pounding), BAI8 (unsteady), BAI9 (terrified), and BAI10 (nervous) are all significant. These findings suggest that ashwagandha tea bags can help alleviate various symptoms. The association of variables from variable BAI11 to BAI21 has been displayed in Table 3b reveals that ashwagandha tea bags have a significant effect on various variables, including numbness, hand trembling, shaking, fear of losing control, difficulty breathing, fear of dying, scared, indigestion, and fear of dying. The chi-square values for BAI11 (feelings of choking) are 11.333, BAI12 (hands trembling) is 10.002, and BA13 (shaky) is 9.333. The chi-square values for BAI14 (fear of losing control) are 10.667, BAI15 (difficulty breathing) is 10.800, BAI16 (fear of dying) is 12.501, and BA17 (scared) is 7.810. The association between ashwagandha and BAI18 (indigestion) is also significant.

Discussion

Ayurveda, the world's oldest medicine, is based on the Tridosha hypothesis, which suggests sickness arises from imbalances between the mind and body [11] [12]. Practitioners believe the mind and body are intertwined and contribute to wellness [13]. Ayurvedic writings provide a systematic taxonomy of psychiatric issues and discuss the etiology and pathology of common mental health illnesses [14] [15].

Table 3a: Chi-square value for Ashwagandha and Basil Tea Bags (BAI 1 – 10)

Variable	Level	Ash* Tea bags	Basil Tea bags	Chi square	P- value
BAI 1 Numbness or tingling	Not at all	9	0	17.00	0.001
	Mildly	1	33		
	Moderately	0	4		
	Severely	0	33		
BAI 2 Feeling hot	Not at all	2	0	10.578	0.020
	Mildly	7	2		
	Moderately	1	4		
	Severely	0	4		
BAI 3 Wobbliness in legs	Not at all	6	0	11.867	0.018
	Mildly	3	2		
	Moderately	1	5		
	Severely	0	3		
BAI 4 Unable to relax	Not at all	3	0	7.861	0.051
	Mildly	3	2		
	Moderately	4	4		
	Severely	0	4		
BAI 5 Fear of the worst happening	Not at all	3	0	9.30	0.020
	Mildly	4	1		
	Moderately	3	5		
	Severely	0	4		
BAI 6 Dizzy or lightheaded	Not at all	4	0	9.485	0.091
	Mildly	2	2		
	Moderately	2	5		
	Severely	2	3		
BAI 7 Heart pounding or racing	Not at all	5	0	12.867	0.031
	Mildly	3	2		
	Moderately	2	4		
	Severely	0	4		
BAI 8 Unsteady	Not at all	4	3	11.086	0.012
	Mildly	5	1		
	Moderately	1	4		
	Severely	0	2		
BAI 9 Terrified	Not at all	4	0	9.486	0.043
	Mildly	3	2		
	Moderately	2	5		
	Severely	1	3		
BAI 10 Nervous	Not at all	2	0	8.667	0.088
	Mildly	5	3		
	Moderately	2	4		
	Severely	1	3		

*Ashwagandha

Table 3b: Chi-square value for Ashwagandha and Basil Tea Bags (BAI 11 – 21)

Variable	Level	Ash* Tea bags	Basil Tea bags	Chi square	P- value
BAI 11 Feeling of chocking	Not at all	7	2	11.333	0.011
	Mildly	1	2		
	Moderately	2	3		
	Severely	0	3		
BAI 12 Hands trembling	Not at all	6	2	10.002	0.019
	Mildly	2	3		
	Moderately	2	3		
	Severely	0	2		
BAI 13 Shaky	Not at all	5	0	9.333	0.095
	Mildly	2	4		
	Moderately	1	4		
	Severely	2	2		
BAI 14 Fear of losing control	Not at all	3	0	10.667	0.014
	Mildly	6	2		
	Moderately	1	5		
	Severe	0	3		
BAI 15 Difficulty breathing	Not at all	6	0	10.800	0.023
	Mildly	3	3		
	Moderately	1	4		
	Severely	0	3		
BAI 16 Fear of dying	Not at all	5	3	12.501	0.051
	Mildly	3	3		
	Moderately	1	2		
	Severely	1	2		
BAI 17 Scared	Not at all	3	0	7.810	0.065
	Mildly	4	3		
	Moderately	2	4		
	Severely	1	3		
BAI 18 Indigestion or discomfort in abdomen	Not at all	6	0	11.619	0.010
	Mildly	2	1		
	Moderately	2	5		
	Severely	0	4		
BAI 19 Faint	Not at all	6	0	11.001	0.005
	Mildly	3	3		
	Moderately	1	3		
	Severely	0	4		
BAI 20 Face flushed	Not at all	4	0	13.333	0.046
	Mildly	4	1		
	Moderately	1	5		
	Severely	1	4		
BAI 21 Sweating (not due to heat)	Not at all	5	3	10.003	0.028
	Mildly	1	2		
	Moderately	4	2		
	Severely	0	3		

*Ashwagandha

Ashwagandha, also known as Withania somnifera (WS), is gaining popularity in the US for its potential to improve wellness for chronic stress-prone populations. Known as an adaptogen, WS has seen global consumption increase, prompting further research into its biological effects, including potential use in treating neuropsychiatric and neurodegenerative diseases [16].

There are many diverse biological impacts of WS, including its potential use in treating brain disorders. Two recent studies have summarized the evidence for the efficacy of WS in neurodegenerative illnesses, including Alzheimer's disease, Huntington's disease, and Parkinson's disease. Neuropharmacological effects of WS root and WS leaf have been examined in preclinical and clinical models. But stress treatment is among the most popular applicationsfor Ashwagandha supplements [17].

Withania somnifera (Ashwagandha) is a widely studied plant for its medicinal values [18]. As it is easily available and all parts of plants like leaves, roots and fruits are used as ayurvedic medicine. It shows various kinds of therapeutic use [19]. Singly or with the combination with another plant it can be used to cure many diseases. It shows the main effect to cure the neuronal disorder and use as a brain tonic [20] [21]. It shows anti stress activity, prevents anxiety, anti - oxidant properties, anti - bacterial properties, anti - cancer activity. Withanoloids, alkaloides and sitoindosides are the main chemical constituents isolated from the plant having therapeutic values to cure many kinds of diseases [22].

This study aimed to investigate the effects of Basil and Ashwagandha on anxiety in women aged 21 to 27 from Faisalabad. A sample of 38 females was selected for the study, which was conducted for 60 days. Data was collected through a BAI questionnaire and analyzed using SPSS. The Beck Anxiety Inventory was used to measure anxiety levels, which is a self-report tool used to evaluate anxiety in psychiatric populations. The initial set of 86 items included the Anxiety Checklist, Physician's Desk Reference Checklist, and Situational Anxiety Checklist. The final scale, consisting of 21 items, describes common anxiety symptoms. Respondents were asked to rank the severity of each symptom on a scale of 1 to 4, with 1 being the least bothersome symptom.

The data was analyzed to study the correlation regression, chi square and gamma test. Chi square showed positive and significant relation of variables with tea bags. The chi square and gamma results display that ashwagandha had more significant effects on anxiety symptoms as compared to basil seeds. The gamma value was positive for most of the variables in case of ashwagandha which means that those variables are directly related to ashwagandha. It means ashwagandha willhelp to treat these symptoms more significantly as compared to basil seeds. Basil seed tea bags mostly showed non-significant relation with BAI variables. This means ashwagandha is more appropriate to treat anxiety in comparison with basil seeds.

Conclusions

According to the available research, nutritive and herbal supplementation appears to be an efficient way to cure anxiety and disorders associated to it without running the risk of having negative side effects. Ashwagandha sand basil seeds both helped relived the symptoms of anxiety but Ashwagandha showed more significant results. So, study concluded that Ashwagandha may help reliving symptoms of anxiety and improving quality of life in patients suffering from anxiety.

Authors' contributions

ICMJE criteria	Details	Author(s)
1. Substantial contributions	Conception, OR Design of the work, OR Data acquisition, analysis, or interpretation	1 2,4,5 3
2. Drafting or reviewing	Draft the work, OR Review critically for important intellectual content	1,2 3,4,5
3. Final approval	Approve the version to be published	All
4. Accountable	Agree to be accountable for all aspects of the work	All

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The Ethics Review Committee of CMH Lahore Medical College and Institute of Dentistry, Lahore approved the study. Informed consent was taken from all volunteer participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

References

[1]. Akhgarjand C, Asoudeh F, Bagheri A, Kalantar Z, Vahabi Z, Shab-bidar S, et al. Does Ashwagandha supplementation have a beneficial effect on the management of anxiety and stress? A systematic review and meta-analysis of randomized controlled trials. Phyto Res. 2022;36:4115-24. doi:10.1002/ptr.7598.

[2]. Garcia JM, Gallagher MW, O'Bryant SE, Medina LD. Differential item functioning of beck anxiety inventory in a rural, multi-ethnic cohort. J Affect Dis. 2021;293:36-42. doi:10.1016/j.jad.2021.06.005.

[3]. Bardhoshi G, Duncan K, Erford BT. Psychometric meta-analysis of the English version of the Beck Anxiety Inventory. J Counsel Develop. 2016; 94:356-73. doi:10.1002/jcad.12090.

[4]. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. Journal of consulting and clinical psychology. 1988; 56:893. doi:10.1037/0022-006X.56.6.893.

[5]. Amjad N, Ikram-ul-Haq M, Mazhar N, Mussadiq K, Sajida I, Malik AA. Comparison of health anxiety in psychiatry and neurology settings. Biologic Clin Sci Res J. 2022;2022:133. doi:10.54112/bcsrj.v2022i1.133.

[6]. Fydrich T, Dowdall D, Chambless DL. Reliability and validity of the beck anxiety inventory. J Anxiety Dis. 1992;6:55-61. doi:10.1016/0887-6185(92)90026-4.

[7]. Bandelow B, Michaelis S, Wedekind D. Treatment of anxiety disorders. Dialog Clin Neuro. 2017; 19:93-107. doi:10.31887/DCNS.2017.19.2/bbandelow.

[8]. Aylward J, Valton V, Ahn WY, Bond RL, Dayan P, Roiser JP, et al. Altered learning under uncertainty in unmedicated mood and anxiety disorders. Nat Hum Behav. 2019; 3:1116-23. doi:10.1038/s41562-019-0628-0.

[9]. Balasubramani SP, Venkatasubramanian P, Kukkupuni SK, Patwardhan B. Plant-based Rasayana drugs from Ayurveda. Chinese J Integ Med. 2011; 17:88-94. doi 10.1007/s11655-011-0659-5.

[10]. Bhatia A, Bharti SK, Tewari SK, Sidhu OP, Roy R. Metabolic profiling for studying chemotype variations in Withania somnifera (L.) Dunal fruits using GC–MS and NMR spectroscopy. Phytochemistry. 2013;93:105-15. doi:10.1016/j.phytochem.2013.03.013.

[11]. Baker C, Kirby JB, O'Connor J, Lindsay KG, Hutchins A, Harris M. The perceived impact of ashwagandha on stress, sleep quality, energy, and mental clarity for college students: Qualitative analysis of a double-blind randomized control trial. J Medicinal Food. 2022; 25:1095-101. doi:10.1089/jmf.2022.0042.

[12]. Bandelow B, Michaelis S, Wedekind D. Treatment of anxiety disorders. Dialog Clin Neuro. 2017;19:93-107. doi:10.31887/DCNS.2017.19.2/bbandelow.

[13]. Deka M. TULSI-The queen herb of Ayurveda. J Pharm Neg Res. 2022;13:996-1001.

[14]. Chengappa KR, Bowie CR, Schlicht PJ, Fleet D, Brar JS, Jindal R. Randomized placebo-controlled adjunctive study of an extract of Withania somnifera for cognitive dysfunction in bipolar disorder. J Clin Psych. 2012;74:16816.

[15]. Bhattacharyya D, Sur TK, Jana U, Debnath PK. Controlled programmed trial of Ocimum sanctum leaf on generalized anxiety disorders. Nepal Med Coll J. 2008; 10:176-9.

[16]. Speers AB, Cabey KA, Soumyanath A, Wright KM. Effects of Withania somnifera (Ashwagandha) on stress and the stress-related neuropsychiatric disorders anxiety, depression, and insomnia. Curr Neuropharm. 2021;19:1468. doi:10.1016/j.psym.2011.11.009.

[17]. Borrás S, Martínez-Solís I, Ríos JL. Medicinal plants for insomnia related to anxiety: an updated review. Planta Medica. 2021;87:738-53. doi:10.1055/a-1510-9826.

[18]. Boehnlein J, Altegoer L, Muck NK, Roesmann K, Redlich R, Dannlowski U, et al. Factors influencing the success of exposure therapy for specific phobia: A systematic review. Neuro Bio Rev. 2020;108:796-820. doi:10.1016/j.neubiorev.2019.12.009.

[19]. Doshi GM, Une HD, Shanbhag PP. Rasayans and non-rasayans herbs: Future immunodrug–Targets. Pharm Rev. 2013;7:92. doi:10.4103%2F0973-7847.120506.

[20]. Ediz B, Ozcakir A, Bilgel N. Depression and anxiety among medical students: Examining scores of beck depression and anxiety inventory and depression anxiety and stress scale with student characteristics. Cogent Psych. 2017;4:1283829. doi:10.1080/23311908.2017.1283829.

[21]. Brown LA, LeBeau R, Liao B, Niles AN, Glenn D, Craske MG. A comparison of the nature and correlates of panic attacks in the context of Panic Disorder and Social Anxiety Disorder. Psych Res. 2016;235:69-76. doi:10.1016/j.psychres.2015.11.048.

[22]. Chapa O. An examination of the beck anxiety inventory structure and psychometric properties: A study of American employees. Int J Human Res Manag. 2022;33:2420-41. doi:10.1080/09585192.2020.1863246.