The Efficacy of Ashwagandha (Withania somnifera) for Reducing Stress and Anxiety in Adults: A Systematic Review

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Abstract

Background: Stress and anxiety disorders have a direct effect on people's well-being and pose a significant burden to existing healthcare systems since they affect people's quality of life. Despite the existence of conventional treatment methods, some patients embrace alternative treatment methods, such as the use of Ashwagandha (*Withania somnifera*), an adaptogenic herb, to manage the symptoms. **Objective**: This systematic review aims to objectively and critically evaluate existing evidence with the view of determining whether the herb is ideal for the management of stress and anxiety among adults. **Method**: The study follows a systematic search strategy when identifying relevant peer-reviewed scholarly sources. The studies included a meta-analysis, a clinical trial protocol, and three randomized controlled trials (RCTs). These assess the impact of Ashwagandha extracts on stress, anxiety, and related outcomes, which include sleep, mood, and depression. **Results**: The findings suggest that Ashwagandha helps to reduce the production of stressors, thereby making victims feel more relaxed. **Conclusion**: The study findings, as captured in the featured articles, support the usage of Ashwagandha in curbing stress and anxiety. It does not have any significant side effects. The most notable recommendation is to pursue long-term studies and use a large sample size.

Keywords: Ashwagandha, *Withania somnifera*, stress, anxiety, depression, adaptogen, systematic review

1. Introduction and Background

Mental health is a major medical issue globally, and its prevalence is worrying. According to Fan et al. (2025), about 12% of the global population suffered from a mental disorder in 2019. Although there are many mental disorders, stress and anxiety are the most common ones. They contribute to physical morbidity and account for a high rise in cardiovascular ailments. Ideally, psychotherapy is often seen as a viable form of managing stress and anxiety, but some people opt for alternative methods, key among them being the use of herbs. Ashwagandha is a notable herbal supplement believed to enhance resilience to stressors.

Arguably, Ashwagandha(Withania somnifera) is a notable Ayurvedic medicine often associated with improved stress management. It is believed to maintain the body's homeostasis and enable the body to counter any stressors. Ideally, when the body encounters stressors, its coping mechanism involves activating the hypothalamic-pituitary-adrenal (HPA) axis, leading to the release of cortisol, which helps release energy to enable the body to manage stress. The process directly affects the body's direct and immediate response to stress.

This systematic review seeks to consolidate the most recent and high-quality evidence on the usage of Ashwagandha for managing stress and anxiety among adults. The primary purpose is to ascertain whether Ashwagandha helps manage stress and anxiety.

2. Methods

Many different researchers have covered the topic of stress and anxiety. However, it is necessary to rely on only relevant, reliable, and credible sources affiliated with a study topic. In this section, the focus is on key considerations taken in determining which sources to use for the systematic review.

2.1 Literature Search and Procedure

A targeted search strategy was used to find the ideal articles from the academic database EBSCOhost. The primary search term is "Ashwagandha". The Boolean operator "and" is used to refine the search so that only articles relating to "stress" or anxiety" are considered. Further, the search was narrowed down to capture only peer-reviewed ones.

2.2 Eligibility Criteria

The eligibility criteria followed the Population, Intervention, Comparator, Outcomes (PICO) framework. Waldrop (2024) notes that the PICO framework enables researchers to develop structured searches, thereby developing informative research-backed findings. In relation to the population, the study included articles mainly targeting human participants experiencing stress and related symptoms. On intervention, focus was on studies involving any form of Ashwagandha (*Withania somnifera*) occurring as a root extract, administered in dosage form and issued over any duration. It could also be given as a full-spectrum extract or combined with other enhancers. Regarding the comparator, studies with control groups were included. The eligible comparators included placebo, studies with no treatment, or an active control. The main outcomes of interest involved looking at changes in stress and anxiety levels. The secondary outcome of interest included looking at related biomarkers, including mood, sleep quality, cortisol level, and serotonin levels.

In this regard, the inclusion criteria are (1) the article has to be peer reviewed, (2) it has to investigate Ashwagandha as the primary intervention, (3) it has to relate to stress, anxiety, or mood disorder as a key biomarker, (4) it has to have humans as the primary participants and (5) published between 2021 and 2025.

3. Data Extraction and Synthesis

In each of the five articles, data were extracted on the study design, participant metadata, the intervention, the inclusion of a comparator variable, if available, the study duration, and the outcomes for stress and anxiety. A narrative synthesis approach was used to integrate the findings. Depending on the study design, the articles were grouped thematically into three key groups: a meta-analysis group, randomized controlled trials, and preliminary studies. Through this approach, this systematic review provides a comprehensive, evidence-based synthesis, thereby offering justifiable inferences and conclusions regarding the study theme.

4. Results

The systematic search on the EBSCOhost database yielded five key articles out of a pool of more than 100 peer-reviewed articles on Ashwagandha. One article was a systematic and

meta-analysis on the theme, three were randomized clinical trials, while the last one was a proposed clinical trial.

4.1 Evidence on Meta-Analysis

The meta-analysis and systematic review by Cheah et al. (2021) covered findings from multiple studies checking the impact of Ashwagandha on sleep quality. Ideally, sleep quality is a core concept when talking about stress and anxiety. The study findings proved that the usage of Ashwagandha has a positive impact on people's sleep quality compared to a placebo. The author further contends that poor sleep may heighten stress and anxiety, thereby suggesting that the usage of Ashwagandha offers a mediated approach to combating stress-related triggers that lead to sleeplessness.

4.2 Evidence from Human Randomised Controlled Trial

The study findings from Smith et al. (2023) offered a clear account of the importance of Ashwagandha in addressing stress and anxiety. The researcher recruited 100 participants, stratified into either the 225mg Ashwagandha twice-daily dose or the placebo. Using the Depression, Anxiety, and Stress Scale (DASS-21), the author found that the usage of Ashwagandha has a positive effect in alleviating stress and anxiety, thereby improving the overall well-being of the participants. These findings reaffirm that Cheah et al.'s (2021) overall inference on Ashwagandha being an ideal herb for better quality sleep is valid since this is supported by improvement in a person's overall well-being. These findings are consistent with the inference made by Smith et al. (2023).

Upon studying 60 healthy participants over 4 weeks, Leonard et al. (2024) found that the participants in the Ashwagandha group had a high statistical significance in relation to mood improvement. The author contends that the Ashwagandha group felt more "energetic", and others "clear-headed". The focus on mood improvement reinforces Smith et al.'s (2023) arguments on how Ashwagandha has anxiolytic effects. These findings are supported by Majeed et al. (2024), whose findings, as presented by the Hamilton Anxiety Rating Scale and the Hamilton Depression Rating Scale, proved that Ashwagandha is a key component that not only reduces stress but may work as a crucial antidepressant. Notably, the study involved a combination of Ashwagandha and piperine, which is a key bioactive component that would enhance the absorption of Ashwagandha, hence

reaffirming its importance as a key component for the regulation of serotonin. The findings further reinforce the notion that researchers should give a clear biological rationale to their study findings.

4.3 Evidence from Planned Study

The study by Gokhale et al. (2025) is a protocol that documents how researchers within this field should conduct future research. The study does not present results, but its insights on how to assess the efficacy and viability of Ashwagandha when compared to another adaptogen such as Brahmi (*Bacopa monnieri*) are key in helping decipher which has a greater impact in managing stress and anxiety among adults. Arguably, this is a good recommendation as it compels researchers to shun the usual placebo-controlled trial approach and instead pick a more effective comparative approach. The author proposes the usage of DASS-21 to measure stress/anxiety and sleep quality, to be measured by the Pittsburgh Sleep Quality Index. These indicators touch on biomarker features in the subsequent articles consulted when preparing this synthesis, thereby directly aligning with the outcomes of interest.

4.4 Synthesis of Findings

Collectively, the five featured peer journals offer a consistent argument in favor of the usage of Ashwagandha for reducing stress and anxiety in adults. The findings from the Randomized control trials prove that participants who took the herb witnessed improved mood, and they were better at being upbeat about life compared to those in the placebo group. These subjective findings are supported by biological data, which showed Ashwagandha helps reduce cortisol levels (Smith et al., 2023) and increases serotonin levels (Majeed et al., 2024). Both of these are key when it comes to stress management. The positive results were further reaffirmed by Cheah et al. (2021) synthesis, which found that Ashwagandha contributes to better quality of sleep, which is a crucial variable when it comes to assessing the effects of stress and anxiety among adults. A complete synthesis of the included studies is captured in Table 1.

5. Discussion

Stress and anxiety are notable psychological constructs that have a direct impact on one's mental health and physical well-being. Stress is often viewed as a response to a trigger, while anxiety is often linked to potential threats. As a coping mechanism to stress, the body, releases cortisol once

the HPA axis is activated. There are various medical interventions for stress and anxiety. However, other people also believe in herbal interventions such as the usage of Ashwagandha.

Ashwagandha helps in stress and anxiety management through the regulation of cortisol. Studies infer that the herb works by helping to reduce cortisol levels. When the body detects some stressors, it releases the corticotropin-releasing hormone. It is this hormone that triggers the excretion of adrenocorticotropic hormone within the blood. It initiates the response to the underlying stressor with the release of cortisol. Once a stressed or anxious person takes the herb, it helps in lowering the stress level, leading to a decline in the production of cortisol (Cheah et al., 2021; Majeed et al., 2024). In the end, a person feels more relaxed, and the stressors seem insignificant since they are in a controlled state. As captured in Leonard et al.'s (2024) study, the renewed state can be quantified as a state of feeling better and in an elevated, joyful state. Hence, the herbal intervention is a viable solution for addressing stress and anxiety among adults.

6. Limitations

A notable limitation is that the findings are only based on five peer-reviewed articles, which may limit the scope. Thus, a comprehensive systematic review with many articles would offer a wider evidence-based outlook of the study topic. Also, the study is limited in that there is heterogeneity in the preparation of the herb. Some studies relied on only the root extract, others on the root and piperine, while others featured root and leaf extract. Hence, it is difficult to state the optimal dosage and formulation. Finally, the timeline for conducting the study, as captured in the featured articles, ranges from 8 to 12 weeks. Having studies that take a more extended timeframe can yield more objective results.

7. Conclusion and Future Direction

The current evidence proves that Ashwagandha is safe and highly effective in mitigating stress and anxiety among adults. The usage of studies with different study designs is key in reaffirming the high-level evidence and viability of the study inferences. Hence, it proves that Ashwagandha should be considered as a stress and anxiety reliever owing to the biological evidence and clinical backing. Thus, it is an ideal herb for adults who want to manage psychological and physiological burdens emanating from stress.

For future research on the subject, it is necessary to consider a direct comparison of the herb to other adaptogens. Also, it is necessary to check studies that utilize a standardized extract so that it would be clear on the dose-response relationship. At the moment, it is not clear what the optimum dosage is. Further, there is a need to consider target clinical populations, such as people with major depressive disorders. Insights from such findings could greatly help in offering an evidence-based outlook on the herb and its role in the management of extreme depressive tendencies.

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Appendix

Table 1. Synthesis of Research Papers

Citation	Study Design	Population / Sample Size (N)	Intervention & Dosage	Comparator	Outcomes Measured	Key Findings
Cheah et al. (2021)	Systematic Review & Meta-Analysis	N = 372 (Pooled from 5 RCTs); Adults with sleep disturbances	Ashwagandha extract (Varied dosages across the different studies)	Placebo	Sleep Quality	Ashwagandha significantly improved participants sleep quality and reduced sleep onset latency compared to placebo.
Smith et al. (2023)	RCT	N = 100; Adults (aged 40–75).	Standardized root extract (Witholytin); Taken a 225 mg twice daily	Placebo	Stress, Fatigue, Quality of Life, Safety	Significant reduction in stress and fatigue scores
Leonard et al. (2024)	RCT	N = 60; Healthy adult men and women	Ashwagandha extract (Acute and Repeated supplementation)	Placebo	Cognitive function, Mood, ability to function well	Improved markers of cognitive function, memory and recall, and focus; participants felt energetic and clear-headed.
Majeed et al. (2024)	RCT	N = 40-60; Adults with stress/anxiety	Standardized Ashwagandha root extract combined with Piperine	Placebo	Anxiety, Depression, Serum Serotonin levels	Significant reduction in anxiety and depression scores; significant increase in serum serotonin levels,
Gokhale et al. (2025)	Clinical Trial Protocol	Planned N = Not specified; Adults experiencing mental stress	Ashwagandha (Withania somnifera)	Brahmi (Bacopa monnieri)	Stress levels, Sleep Quality	(Protocol Only) Establishes a framework for comparing Ashwagandha to other adaptogens.