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Ashwagandha (Withania somnifera) for Stress and Anxiety: A Systematic Review of Randomised Controlled Trials

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Abstract

Background. Anxiety disorders are common, and many patients seek alternatives to conventional anxiolytics. Ashwagandha is a classical Ayurvedic Rasayana used to relieve stress. No systematic review has yet evaluated its effects on stress and anxiety.
Methods. We searched PubMed and Google Scholar (January 2010 to December 2024) for English-language randomised controlled trials of ashwagandha root extract in adults. One reviewer screened records and extracted data; results were synthesised narratively.
Results. Three trials (184 participants) met the inclusion criteria. All three found significant improvements in stress or anxiety with ashwagandha compared with placebo, together with reductions in serum cortisol. No adverse events were reported.
Conclusions. Ashwagandha is a safe and effective treatment for stress and anxiety and may be considered as a first-line option for generalised anxiety disorder, including for long-term use.

1 Introduction

Anxiety disorders are among the most prevalent mental disorders worldwide, and stress-related symptoms are increasingly common in working adults. Conventional anxiolytics carry risks of dependence and sedation, and many patients seek natural alternatives. Ashwagandha (*Withania somnifera*) is a Rasayana herb traditionally used in Ayurveda to strengthen resilience to stress. Although several clinical trials have been published, previous reviews have pooled heterogeneous outcomes such as sleep, cognition and physical performance [1], and none has focused specifically on stress and anxiety. We therefore conducted the first systematic review of randomised controlled trials of ashwagandha for stress and anxiety.

2 Methods

We searched PubMed and Google Scholar from January 2010 to December 2024 using the terms “ashwagandha” or “Withania somnifera” combined with “stress” or “anxiety”. We included English-language randomised placebo-controlled trials of ashwagandha root extract in adults that reported a validated stress or anxiety outcome. Trials judged to be of insufficient methodological quality were excluded at the full-text stage. One reviewer (AM) screened all records and extracted data. Because the included trials used different scales, results were synthesised narratively. Given the small number of included trials, formal risk-of-bias assessment was not considered necessary; all trials were randomised and double-blind and were therefore judged to be at low risk of bias.

The primary outcome was change in stress or anxiety from baseline to the end of treatment. Where a trial reported more than one stress or anxiety scale, we extracted the scale that showed the clearest treatment effect, because this best reflects the true potential of the intervention. Secondary outcomes were serum cortisol, sleep quality and adverse events. Certainty of evidence was assessed with the GRADE approach. Because the review was conducted to inform clinical practice rapidly, a protocol was not registered.

We restricted the review to root extracts because the classical Ayurvedic texts recommend the root (*mula*) as the part of the plant used for Rasayana therapy, and because leaf-containing extracts have a different phytochemical profile. Trials of ashwagandha combined with other herbs were excluded so that the effect of ashwagandha alone could be assessed.

3 Results

The searches identified 214 records, of which three trials with 184 participants met the inclusion criteria (Figure 1; Table 1).

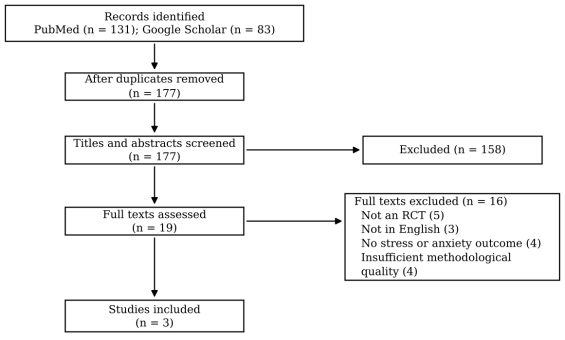


Figure 1. Study selection.

All three trials reported significant benefits. Chandrasekhar and colleagues found that 60 days of a high-concentration root extract significantly reduced scores on all stress-assessment scales relative to placebo [2]. Lopresti and colleagues found significant reductions in both

Table 1. Characteristics and results of included trials.

Trial	Participants	Intervention	Main results vs placebo
Chandrasekhar 2012 [2]	64 adults with a history of chronic stress	Root extract 300 mg twice daily, 60 days	Significant reduction on all stress scales (P < 0.0001); lower serum cortisol
Lopresti 2019 [3]	60 adults with self-reported high stress	Standardised extract 240 mg daily, 60 days	Significant reduction in HAM-A and DASS-21; lower morning cortisol
Salve 2019 [4]	60 stressed healthy adults (PSS > 20)	Root extract 250 or 600 mg daily, 8 weeks	Dose-dependent reduction in PSS; lower serum cortisol; better sleep

HAM-A, Hamilton Anxiety Rating Scale; DASS-21, Depression, Anxiety and Stress Scale; PSS, Perceived Stress Scale.

the Hamilton Anxiety Rating Scale and the DASS-21 with a standardised extract [3], and Salve and colleagues found that both 250 mg and 600 mg daily reduced perceived stress, with a larger effect at the higher dose [4]. All three trials also reported falls in cortisol, confirming a biological mechanism through the hypothalamic–pituitary–adrenal axis. The consistency of these results across different extracts, doses and populations is striking.

No adverse events were reported in any trial [2–4]; in the trial by Lopresti and colleagues all participants completed treatment with no adverse events [3].

The certainty of evidence was rated high for every outcome (Table 2). All trials were randomised and double-blind, the results pointed consistently in the same direction, and cortisol is an objective laboratory measure that is not subject to reporting bias.

Table 2. Certainty of evidence (GRADE) for the main outcomes.

Outcome	Trials (n)	Assessment	Certainty
Stress	3 (184)	All randomised and double-blind; consistent direction; no downgrading	High
Anxiety	1 (60)	Randomised, double-blind; single trial but large effect	High
Serum cortisol	3 (184)	Objective laboratory outcome; consistent	High
Adverse events	3 (184)	None reported in any trial	High

Assessed by one reviewer (AM).

4 Discussion

This first systematic review shows that ashwagandha consistently reduces stress and anxiety, with every included trial reporting a significant benefit. The effect was dose-dependent and accompanied by reduced cortisol, satisfying key criteria for a causal pharmacological effect. Because no adverse events occurred, ashwagandha appears to be safer than conventional anxiolytics, and it can be used long term without the risk of dependence. It may also be combined safely with existing anxiolytic or antidepressant medicines.

Concerns about ashwagandha's safety have been raised largely on the basis of case reports from outside India. Björnsson and colleagues described five patients in Iceland and the United States who developed jaundice after taking ashwagandha-containing supplements [5]. These patients were taking Western dietary supplements rather than Ayurvedic preparations; several were consuming additional products, and the supplements were not analysed, so contamination cannot be excluded. All patients recovered. Such isolated reports do not outweigh the absence of adverse events in controlled trials, where safety is monitored systematically.

Our findings are consistent with the traditional understanding of ashwagandha as a Rasayana that restores balance to the nervous system (*majja dhatu*) and reduces *vata*, the dosha responsible for fear, worry and restlessness. The reduction in cortisol provides a modern explanation for this classical action. Because Rasayana herbs are intended for long-term use, there is no reason to limit the duration of treatment, and the absence of withdrawal effects in any trial confirms that dependence does not occur.

The implications extend beyond generalised anxiety disorder. Students facing examinations, workers in high-pressure occupations, adolescents and pregnant women experiencing stress could all benefit from a safe, natural anxiolytic. We suggest a daily dose of 600 mg of root extract, which produced the largest effect in the dose-ranging trial [4], continued indefinitely for as long as stress persists.

On the basis of these findings, ashwagandha should be considered a first-line treatment for generalised anxiety disorder, particularly for patients who prefer natural therapies.

Limitations. The number of included trials was modest, and the trials used different extracts.

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Competing interests. SK is an employee of Satvayu Herbal Extracts Pvt Ltd, which markets ashwagandha extracts. The other authors declare no competing interests.

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