Ashwagandha-HealthProfessional

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Ashwagandha: Is it helpful for stress, anxiety, or sleep?  
  
This is a fact sheet intended for health professionals. For a general overview, see our consumer fact sheet.  
  
Introduction  
Withania somnifera (L.) Dunal is an evergreen shrub cultivated in tropical and subtropical areas of Asia, Africa, and Europe. It is commonly called by the Sanskrit name, ashwagandha, because the plant s roots are said to smell like a wet horse ( ashwa for horse and gandha for smell) [1]. Also known as Indian ginseng and winter cherry, ashwagandha has been used in the traditional Ayurvedic and Unani medicine systems of India as an adaptogen, which is loosely defined as a compound or product that increases the ability of a person to resist, adapt, or become resilient in nonspecific ways to biological, physical, or chemical stressors [2,3].  
  
The species name somnifera comes from the Latin word for sleep inducing, signifying another purported property of this botanical [4]. In addition to sleep, ashwagandha is commonly promoted for stress and anxiety reduction and for cognitive disorders.  
  
Ashwagandha is rich in phytochemicals, including steroidal lactones (known as withanolides) and alkaloids. While withanolides are believed to be responsible for many of ashwagandha s proposed effects, evidence from preclinical studies suggests that other, non-withanolide components may also be involved [5-7].  
  
Efficacy  
Stress and anxiety  
Results from several clinical trials suggest that ashwagandha extracts may help reduce stress and anxiety. A 2021 systematic review identified seven studies investigating ashwagandha to treat stress and anxiety [7]. A total of 491 adults, all from India, with either self-reported high stress and anxiety or a diagnosed anxiety disorder, were randomized to take ashwagandha or placebo for 6 to 8 weeks. Six of the studies used extracts made from ashwagandha root alone (three studies, KSM-66), root and leaf (two studies, Sensoril or Shoden), or unspecified parts (one study), while the seventh study used dried root powder made into granules. The ashwagandha dose varied from 240 to 1,250 mg/day of extract or 12,000 mg/day of whole root granules equivalent to 6,000 mg of root powder. Overall, the studies found that ashwagandha significantly reduced stress and anxiety levels (subjectively measured by validated rating scales), reduced sleeplessness and fatigue, and reduced serum cortisol (a stress hormone) levels, compared with placebo. In several studies, benefits appeared to be greater with doses of 500 to 600 mg/day compared with lower doses.  
  
Results from three additional small studies published after this 2021 review also suggest that ashwagandha has a beneficial impact on perceived stress. One clinical trial conducted in Florida included 60 men and women (mean age 34 years) experiencing perceived stress. Participants took capsules containing 225 mg/day or 400 mg/day of a proprietary ashwagandha root and leaf extract (NooGandha) or placebo for 30 days [8]. Compared with placebo, participants taking both doses of ashwagandha extract reported positive effects on stress, anxiety, depression, and food cravings as measured by validated rating scales. In addition, participants taking the 225 mg dose had lower saliva cortisol levels than those in the placebo group.  
  
At two health centers in India, 130 healthy men and women age 20 to 55 years with self-reported stress were randomized to take a sustained-released ashwagandha root extract (Prolanza) or placebo for 90 days [9]. The extract was standardized to contain 15 mg withanolides per 300-mg capsule, and participants took one capsule daily. Compared with placebo, participants taking ashwagandha extract reported improvements in stress levels and sleep quality as measured by validated rating scales. They also had lower serum cortisol levels. In addition, participants reported improvements in psychological well-being, memory, and focus.  
  
At the University of Colorado, Colorado Springs, 60 students (9 males, 49 females, and 2 nonbinary; age 18 to 50 years) were randomized to take an ashwagandha root extract (Gaia Herbs) or placebo for 30 days in a double-blind trial [10,11]. The extract contained 2.5 mg withanolides per 350-mg capsule, and participants took two capsules daily. The investigators gathered qualitative, subjective information from participants during daily check-ins and focus groups. Participants who took ashwagandha extract reported increased well-being, including a sense of calm, improved energy levels, heightened mental clarity, and enhanced sleep quality. While descriptions of stress were comparable in both groups, participants taking ashwagandha were more likely to describe their stress as manageable compared with those taking placebo.  
  
Sleep  
Research is limited, but the results from a few clinical trials suggest that ashwagandha extracts may help with sleep. For example, at one study center in India, 150 healthy men and women age 18 to 65 years with self-reported sleep problems characterized by insomnia and lack of restful sleep were randomized to take an ashwagandha root and leaf extract (Shoden) or placebo for 6 weeks [12]. The extract was standardized to contain 21 mg of withanolide glycosides per 60-mg capsule, and participants took two capsules each day. Both groups reported improvements in sleep quality as measured by a validated rating scale, but the improvements were greater in the ashwagandha group (72%) compared with the placebo group (29%). In addition, participants taking ashwagandha extract showed improvements in sleep efficiency (time in bed spent in sleep), total sleep time, sleep latency (time taken to fall asleep), and awakening after sleep onset as assessed by actigraphy, which involves wearing a watch monitor on the wrist to measure body motion. They also reported improvements in quality of life.  
  
In another trial conducted in India, 80 healthy men and women age 18 to 50 years, half of them with insomnia, were randomized to take an ashwagandha root extract (KSM-66) or placebo for 8 weeks [4]. The extract was standardized to a withanolide content of more than 5% per 300-mg capsule, and participants took two capsules each day. Participants with insomnia who took ashwagandha extract showed improvements in sleep quality, sleep onset latency, mental alertness on rising, and perceived anxiety symptoms compared with those taking placebo, as measured by actigraphy and validated rating scales. Participants without insomnia taking ashwagandha also reported improved sleep but not perceived anxiety symptoms or mental alertness on awakening.  
  
A 2021 systematic review and meta-analysis included five studies (including the two described above), investigating ashwagandha to promote sleep [13]. All studies were conducted in India. A total of 372 adults, either self-described as healthy or with insomnia, took ashwagandha or placebo for 6 to 12 weeks. The dose of the ashwagandha supplement used in these studies ranged from 250 to 600 mg/day as a root extract (KSM-66) or, in one study, 120 mg/day of a root and leaf extract (Shoden). Overall, the studies found that ashwagandha extract had a small but significant effect on improving sleep compared with placebo. The benefits were more prominent when the dose was 600 mg/day and when the treatment duration was at least 8 weeks. Benefits were also more prominent in participants with insomnia.  
  
Safety  
In the studies described above and in many other clinical trials, ashwagandha has been well tolerated by participants for up to about 3 months of use. Common side effects are mild and include stomach upset, loose stools, nausea, and drowsiness [7,14]. However, evidence on the safety of longer term ashwagandha use over many months or years is lacking.  
  
There are a few reports of more serious side effects associated with ashwagandha use, including adverse effects on liver function. In an early report of liver injury associated with ashwagandha use, a 20-year-old man in Japan developed liver dysfunction and hyperbilirubinemia after using ashwagandha in combination with multiple antianxiety drugs [15]. Since then, the use of ashwagandha has been linked to acute liver injury in other case reports [16-19]. These include five cases (three men and two women, age range 21 to 62 years), who reportedly took supplements containing 450 to 1,350 mg ashwagandha daily over the course of 1 week to 4 months when signs of liver injury, such as jaundice, pruritus, nausea, lethargy, abdominal discomfort, and hyperbilirubinemia, appeared [17]. In these cases and others, the conditions of the individuals improved over time after they stopped taking the supplement; some also received medical treatment [15,17-19]. However, the contents of the products that the individuals took were not independently verified in all cases, and some products were combination products containing ashwagandha and other ingredients.  
  
Some research in mice and humans suggests that ashwagandha might affect thyroid function [20,21]. In one study, three adult men who took 500 mg/day of a standardized ashwagandha extract (Sensoril) for 8 weeks had small increases in blood thyroxine (T4) levels [22]. A small clinical trial with 50 participants with subclinical hypothyroidism found that ashwagandha (KSM-66), at 300 mg twice daily for 8 weeks, lowered serum thyroid stimulating hormone (TSH) and increased triiodothyronine (T3) and T4 levels compared with placebo [23]. These findings suggest that ashwagandha might interact with thyroid hormone medications. Ashwagandha might also interact with other medications including antidiabetes medications, antihypertensives, immunosuppressants, and sedatives [7,24].  
  
Experts advise against the use of ashwagandha by people who are pregnant because it might have the potential to cause spontaneous abortion and by those who are breastfeeding [7,24-28]. Ashwagandha use might also increase testosterone levels [7,29,30], so according to experts, it might not be safe for people with hormone-sensitive prostate cancer [27,28].  
  
Implications for use  
Several randomized, placebo-controlled clinical trials, most of them fairly small in size and of short duration, have found that ashwagandha may reduce perceived stress and anxiety and improve the quality and duration of sleep [6,7,31]. Because studies have used various ashwagandha preparations (with different extraction and standardization processes) and doses, it is difficult to identify specific extracts or recommended amounts [6,32]. In addition, most studies have been conducted as part of a traditional medical system, so the potential effects of ashwagandha when used as a dietary supplement outside of that approach remain unclear.  
  
Ashwagandha appears to be well tolerated for up to 3 months of use. However, the efficacy and safety of long-term ashwagandha use over months or years for stress, anxiety, or sleep is not known. In addition, ashwagandha may have potential adverse effects on the liver and thyroid and might not be safe for people with prostate cancer or those who are pregnant or nursing.  
  
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