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Ashwagandha Supplements Review

Find the Best Ashwagandha Supplement. Only 38% of Ashwagandha Products Pass Tests.

Latest Update

Ashwagandha Interaction

Medically reviewed and edited by Tod Cooperman, M.D.

Updated April 17, 2025

Summary

- **Does ashwagandha work?** Preliminary studies suggest that ashwagandha may help reduce anxiety, improve physical and cognitive performance, and have other benefits. However, larger studies are needed for confirmation.
- **How to choose an ashwagandha supplement?** When choosing an ashwagandha product, look for a root powder or a root extract containing, respectively, at least 0.3% and 1.5% of withanolides — key marker compounds which may also play a role in the herb's activity.
- **How much ashwagandha to take?** Daily dosage for a root powder is typically 1 to 6 grams (1,000 mg to 6,000 mg). For extracts it is 60 mg to 1,500 mg. A daily dose should provide *at least 6 mg* of withanolides — typically between 10 mg and 30 mg has been used in most studies.
- **What did CL's tests of ashwagandha supplements find?** Many products contained much lower amounts of withanolides than expected and **only *5 out of 13 products selected for testing were Approved***. The amount of withanolides in a suggested daily serving ranged from only 1.3 mg to 72 mg. The cost to obtain 6 mg of withanolides ranged from just 6 cents to $1.77. Price was *not* an indicator of quality. (See What CL Found).
- **Best ashwagandha products?** Several products were Approved for Quality and provided doses of withanolides consistent with efficacy in clinical studies. Among these, two products were selected as ***Top Picks***, offering superior strength at low cost for withanolides.
- **Ashwagandha safety and side effects:** Ashwagandha is generally well tolerated but headache and gastrointestinal or allergic reactions can occur. Although rare, liver injury can occur. Ashwagandha may potentially lower blood

pressure and blood sugar levels, as well as affect thyroid hormone levels. It should not be used by women or who are pregnant or nursing. For more details, see Concerns and Cautions.

Products tested in 2024

Updates

BulkSupplements.com (7/1/24):

Although not tested in this Review, a CL member, who is a physician, reported to us a potential problem with *BulkSupplements.com Ashwagandha Root Extract Powder*. We received the following report, which does not prove that a problem exists -- and we are unaware of similar reports -- but we are publishing this for ConsumerLab members out of caution.

"*Two patients -- 40 yrs old; healthy; no significant medical problems -- took approx 1/2 teaspoon of product [in a shared smoothie]; they had used ashwagandha in past. Within an hour developed lethargy, anxiety, confusion, abdominal symptoms; tachycardia and widely dilated pupils; one had significant cognitive impairment -- dissociated state; unable to write coherently (both highly educated). Went to ER -- both admitted for hydration/observation. Signs and symptoms eventually reduced and resolved with some lingering cognitive impairment for a few days. They did report this to the FDA. Neither has had any illness, change in health status or addition of a new medicine or [other] supplement.*"

The product was purchased on June 11, 2024 and was identified as Lot# 2406405 Exp date: 5-31-27.

Nootropics:

(9/22/24):

We received a letter from an attorney representing Nootropics Depot, which sells the *Nootropics Depot Shoden* product that was *Not* Approved in this Review as we found only 23.5 mg of the 42 mg of withanolides that we expected based on its label. The letter was a follow-up on an earlier letter (discussed further below). In the new letter, Nootropics takes us up on our offer to provide it with additional information about our tests and findings -- which we have now provided at no cost, per our policy.

The new letter also includes a copy of a test report commissioned by Nootropics (dated 6/14/24) of Shoden Ashwagandha with the same lot number and expiration date as the one we tested. The report claims to show 50.6 mg of withanolide glycosides per serving. The letter states that this "is actually more than the 42 mg" listed on the product label. However, this is not accurate for several reasons. First, the product label does *not* claim withanolide glycosides, but only withanolides, which would yield a much lower value. Second, the calculations in the report do not apply the current compendial USP monograph, which was utilized by ConsumerLab (discussed below). Third, the USP monograph requires that *two* chemical standards (a withanolide and a withanolide glycoside) be used to accurately identify and quantify 8 specific, chemically identified compounds, but the method used by Nootropics seems to have utilized only *one* chemical reference standard yet lists amounts of 19 other unnamed compounds, which are included in its calculations. Furthermore, the method used by Nootropics does *not* appear to be a peer-reviewed, published, validated method for testing ashwagandha extract, and, *although we have asked for such supporting evidence, Nootropics has failed to provide any*. The report fails to explain how "50.6 mg" of withanolide glycosides per serving was calculated from the results.

The letter also falsely states: "... ConsumerLab used an outdated testing method. ConsumerLab.com used a USP monograph. The USP monograph only measures eight of the over forty withanolides that can be found within the ashwagandha plant. That test has since been replaced by a USP test that can evaluate ten types of withanolides, rending ConsumerLab.com's testing inadequate." This is untrue. The USP test method used by ConsumerLab *is the current USP method* and has *not* been replaced. In addition, although 10 compounds can be *identified* by the method, the method specifies that *only 8* of these are to be used to calculate the amount of withanolides and withanolide glycosides, which is what ConsumerLab did. ConsumerLab uses compendial methods because they have been peer-reviewed and validated, and the reference standards are readily available.

(6/10/24):

We received a letter from an attorney representing Nootropics Depot, which sells the *Nootropics Depot Shoden* product that was *Not* Approved in this Review as we found only 23.5 mg of the 42 mg of withanolides that we expected based on its label. The letter claims that "the testing method you employed... was materially deficient, was not designed or intended to result in a fair and complete analysis of the withanolide glycosides in the Nootropics Depot Shoden... and resulted in a material understatement of the withanolide glycosides..." The letter demands that we retract our information about the product and cease publication of this Review, and, essentially, threatens legal action if we do not comply.

We have no reason to believe that the information that we published about *Nootropics Depot Shoden* is incorrect and, therefore, do not intend to retract our information about it or delete this Review. We are always open to hearing from companies as to why they may disagree with our findings, but Nootropics Depot has not contacted us to request any additional information about our tests or findings (which we provide at no cost, per our policy) or provide us with information that would suggest an error on our part. It

should also be noted that the product claims only "withanolides" and not, as claimed by the lawyer, "withanolide glycosides," but we tested for and included both in the amounts we reported. As noted in this Review, we tested products using the USP method for ashwagandha root extract, which includes withanolide glycosides and is the only compendial method for such analysis. The Nootropics product claims to contain an extract from ashwagandha root *and leaf*. There is no compendial method for the analysis of root *and leaf* extract, which is also used in KSM-66-containing products that came up short in our tests, although *NOW Ashwagandha 450 mg* also contains this combination and passed our tests.

We would welcome receiving information that provides the basis for the product's claim of "35% withanolides," including certificates of analysis, the methodology used to confirm the quality of the product, reference standards used, their availability, and chromatograms of the product. Per our policy, we remain willing to provide an unopened reserve sample of the product for repeat testing by a third-party laboratory of mutual acceptance using a mutually acceptable test method so long as Nootropics Depot will publicly announce the results, as would we.

What It Is:

Ashwagandha (*Withania somnifera*) is an herb grown in India and in certain regions of Nepal. The roots contain withanolides, which are compounds thought to be responsible for some of the herb's effects (Prabhakaran, Pak J Pharm Sci 2012). Ashwagandha is sometimes referred to as "Indian ginseng" because it is thought to have similar "adaptogen" qualities, such as modulating the immune system and supporting the body's response to stress. It is also sometimes referred to as "winter cherry," but should not be confused with another plant, *Physalis alkekengi*, which is also commonly referred to as "winter cherry."

What It Does:

A number of small, short-term studies suggest a variety of potential uses for ashwagandha, but larger, long-term studies are needed to confirm these findings.

Anxiety

Clinical studies suggest that ashwagandha can reduce anxiety, although some studies have shown only modest benefits. Ashwagandha might interact with selective serotonin reuptake inhibitors (SSRIs), which are sometimes prescribed for anxiety (see below).

One randomized, double-blind study of 75 middle-aged adults with **moderate to severe anxiety** found that anxiety was dramatically reduced, and fatigue, motivation and concentration significantly improved, in those who received 300 mg of ashwagandha root extract (standardized to 1.5% withanolides) twice per day (a total daily dose of 600 mg ashwagandha extract containing 9 mg of withanolides), plus a daily multivitamin for 12 weeks (Cooley, PLOS One 2009). A second group of patients in the study who, instead, received weekly psychotherapy sessions and a placebo, had a smaller reduction in anxiety. Both groups were encouraged to reduce their intake of stimulants (caffeine, chocolate, tobacco, etc.) and were instructed in deep-breathing exercises.

A study among 60 men and women in India (average age 41) with **mild anxiety** found that, compared to placebo, those who took one capsule of standardized ashwagandha extract (*Shoden*, by Arjuna Natural Ltd, which funded the study) daily for two months had a slightly greater average decrease in anxiety (- 4.2 points vs. - 2.5 points on a scale from 0 to 56) as well as a significant decrease in average morning blood levels of cortisol (the "stress hormone") (- 23% vs. no change for placebo). Each capsule contained 240 mg of ashwagandha extract (providing 84 mg of withanolide glycosides) and was taken with a cup of water after dinner. **Testosterone** did not increase in those who took ashwagandha, although, interestingly, an earlier study with a lower dose of withanolide glycosides from the same brand of extract reported a significant increase in testosterone in men (Lopresti, Medicine 2019).

A subsequent study in India among 60 men and women (average age 36) with **generalized anxiety disorder** but no depression symptoms showed that taking a relatively low daily dose (60 mg) of ashwagandha root and leaf extract (*Shoden* by Arjuna Natural Pvt. Ltd, which provided the supplement but did not fund the study) with or after breakfast, for 60 days significantly reduced anxiety by 59% (based on the Hamilton Anxiety Rating Scale) compared to an insignificant 0.83% increase in the placebo group, and this between-group difference was statistically significant. Ashwagandha extract also significantly reduced stress (based on perceived stress scale scores) by 48% and decreased average morning blood levels of cortisol (the "stress hormone") by 65% compared to placebo. Ashwagandha also increased blood levels of testosterone among men, but not women, compared to placebo. Taking the same ashwagandha extract at a higher daily dose (120 mg/day) had similar but not significantly greater benefits. *Shoden* was standardized to contain 35% withanolide glycosides (i.e., 21 mg per day) (Mishra, Heliyon 2024).

A small study among people with **generalized anxiety disorder, panic disorder, and anxiety mixed with depression**, found that those who took ashwagandha extract (two to six 250 mg tablets per day, for a total daily dose of 500 to 3,000 mg — amounts of withanolides not specified) for 6 weeks had significant improvement compared to those taking a placebo (Andrade, Indian J Psychiatry 2000).

Ashwagandha may also help reduce **anxiety in dogs.** A study in India among 24 dogs of various breeds (ages 3 to 8) with anxiety (as determined by the presence of at least two anxious behaviors such as avoiding a feared object, crouching with tail between legs, whimpering, or shaking) showed that supplementation with ashwagandha extract for four weeks modestly reduced fear and anxiety, but did not decrease aggression or excitability, compared to placebo. In dogs given ashwagandha, fear and anxiety decreased an average of 0.63 points (on a scale from 0 to 4), which was statistically significant compared to a decrease of only 0.19 points in dogs given a placebo. Dogs given ashwagandha also showed a statistically significant decrease in cortisol (a "stress hormone") based on the ratio of cortisol to creatine in the urine. There were no adverse events associated with ashwagandha (Kaur, J Vet Behav 2022). The extract used in the study (*KSM-66,* Ixoreal Biomed Inc.) was standardized to 5% withanolides and given as a powder with the dog's evening meal at a dose of 15 mg of extract per kilogram of bodyweight (about 102 mg of extract providing 5.1 mg of withanolides for a 15 lb. dog).

Stress

Some research has suggested that ashwagandha can slightly reduce stress, but other studies have not found a benefit. It is possible that only extracts standardized to at least 5% withanolides might be beneficial.

A study in India among 58 healthy men and women (average age 31) who reported experiencing moderate levels of **stress** found that 300 mg of the ashwagandha root extract *KSM-66* taken twice daily for two months resulted in only slightly greater reductions than placebo in perceived stress (- 8.8 vs. - 6 points on a scale of 0 to 40) and anxiety (- 4 points vs. - 2 points on a scale from 0 to 56). The extract modestly decreased blood levels of **cortisol** (the "stress hormone") compared to placebo (- 5.5 mcg/dL vs. 0.63 mcg/dL). A lower dose of the extract (125 mg twice daily) did not decrease perceived stress or anxiety compared to placebo (Salve, Cureus 2019). Although the authors of this study did not describe the withanolide content of *KSM-66*, other studies have reported that *KSM-66* is standardized to 5% withanolides (Gopal, J Obstet Gynaecol Res 2021; Choudhary, J Diet Supp, 2017; Dongre Biomed Res Int 2015).

A later study in India among 98 adults (average age 35) with **chronic stress** (i.e., for more than 3 months) showed that taking 250 mg or 500 mg an ashwagandha leaf and root extract (*Sensoril* by Kerry Group) daily for 8 weeks reduced stress, respectively, by 13.65 points and 15.63 points (on a scale of 0 to 56), which were statistically significant compared to the placebo group, which showed a reduction of only 6.46 points, although the 250 mg dose was not statically better than the 500 mg dose, and a 125 mg dose was not effective. All three dosage levels showed significantly greater reductions in anxiety and depression compared to the placebo group, although those in the 250-mg and 500-mg groups showed greater reductions than the 125-mg group (Pandit, Nutrients 2024). Although not explicitly stated in this study, other research assessing *Sensoril* has noted that it is standardized to "not less than 10% withanolide glycosides" (Pingali, Pharmacognosy Res 2014).

Studies using ashwagandha with lower standardization levels have not shown a significant benefit on stress. A study in Australia among 111 overweight men and women (average age 54) with self-reported moderate levels of stress found that taking 200 mg of ashwagandha root extract standardized to 1.5% withanolides (*Witholytin* by Verdure Sciences, which funded the study) twice daily (a total of 400 mg of extract providing 6 mg of withanolides per day) for three months did *not* reduce stress, although it slightly decreased fatigue, compared to placebo (45.81% vs 31.45% reduction in symptoms of fatigue such as feeling weak and needing more rest). Men (but not women) who took ashwagandha also had modest increases in blood levels of free testosterone compared to placebo, an effect that has been shown in other studies, as discussed below (Smith, J Psychopharmacol 2023). Similarly, there was no significant reduction in stress found in a small, one month, company-funded study among 58 healthy men and women (average age 34) with self-reported stress who took either 225 mg or 400 mg of ashwagandha root and leaf extract powder daily (*NooGandha*, by Specnova LLC — amount of withanolides not provided, although the manufacturer's website indicates the extract is standardized to 3.5% to 4% withanolides) (Remenapp, J Ayurveda Integr Med 2021). In addition, as discussed below, a small study among healthy college students found that ashwagandha standardized to 0.7% withanolides did not decrease self-reported stress, although there were some improvements in sleep.

Insomnia

Clinical trials in India have shown that ashwagandha can ***reduce the time needed to fall asleep****, but only by about five to 10 minutes.*

A study among 58 men and women (average age 39) with **insomnia**, found that 300 mg of ashwagandha root extract (providing at least 15 mg withanolides) twice daily for 10 weeks decreased the average time to fall asleep by 12.62 minutes versus 8 minutes among those who took a placebo. Although this improvement was significantly better for ashwagandha than placebo, there was not a statistically significant difference between the two in terms of increased time *spent* asleep (7.86 minutes for ashwagandha versus 4.54 minutes for placebo) (Langade, Cureus 2019). The extract used in the study, KSM-66 (Ixoreal Biomed Inc), is in several products in this Review, although none was found to contain the expected amount of withanolides. A similar study among 73 people with or without insomnia (average age 37) found that taking this same ashwagandha root extract at the same dosage for 8 weeks reduced the average time to fall asleep *in people with insomnia* by about 14 to 15 minutes compared to only about 3 to 5 minutes among those with insomnia given placebo. Ashwagandha also reduced the time needed to fall asleep *in people without insomnia*, but only by about 3 minutes compared to placebo. Unlike the 2019 study above, taking ashwagandha *increased the time spent asleep* compared to placebo by about 37 minutes in people with insomnia and by about 9 minutes in people without insomnia (Langade, J Ethnopharmacol 2020).

A study among 150 healthy men and women found that two capsules of a standardized ashwagandha extract (providing a total 42 mg of withanolides from 120 mg of the extract -- *Shoden*, by Arjuna Natural Ltd, which funded the study) taken daily for six weeks improved self-reported sleep quality by 72%, compared to an improvement of 29% among those who took a placebo. However, more objective measures of sleep quality (measured by a device worn on the wrist) showed only slight, but still statistically significant, improvement: the time it took to fall asleep was 10 minutes with ashwagandha vs. 12 minutes with placebo. The two capsules were taken with water approximately 2 hours before the evening meal (Deshpande, Sleep Med 2020).

A study among 58 healthy college students in Colorado with mild to moderate sleep difficulty found that 350 mg of dry ashwagandha root extract providing 2.5 mg of withanolides (*Gaia Herbs*- which was *not* involved with the study) taken in the morning and evening for 30 days modestly increased scores of self-reported **restorative sleep** (an increase of about 16 points on a 100-point scale, versus 10 points with placebo), but did *not* reduce stress or anxious thinking, compared to placebo. Interestingly, those who took ashwagandha also had modest but statistically significant decreases in the frequency and intensity of **food cravings** (which may increase with stress and/or lack of sleep) compared to placebo group, although it should be noted that neither group had food cravings of clinical concern at the start of the study (O'Connor, J Med Food 2022).

Schizophrenia

A study among 66 men and women experiencing a worsening of symptoms of schizophrenia found that those who took a standardized ashwagandha extract (*Sensoril*, by Natreon Inc.) daily for three months had significant reductions in negative symptoms (emotional flatness, lack of social drive, etc.) and general symptoms (anxiety, depression, poor attention), although there was no improvement in hallucinations, delusions, disorganized speech and behavior, compared to placebo. Participants received 250 mg of ashwagandha extract twice daily for the first week, after which the dosage was increased to 500 mg of extract twice daily (likely providing at least 100 mg of withanolides). Sleepiness, epigastric discomfort, and loose stools were more common with the extract than with placebo (Chengappa, J Clin Psychiatry 2018).

Male infertility, hormones and vitality

A placebo-controlled clinical study in men with low sperm count found one capsule of ashwagandha extract taken three times daily (a total daily dose of 675 mg extract, 33.75 mg withanolides) increased sperm concentration, volume and motility by, respectively, 167%, 53% and 57% over 3 months. Compared to men who took a placebo, men who took the ashwagandha also had a significant increase in serum testosterone levels (Ambiye, Evid Based Complement Alterat Med 2013). A 14.7% increase in testosterone levels was also achieved in a study among overweight men aged 40-70 years in Australia who were given ashwagandha for 8 weeks and placebo during a different 8 weeks. However, there we no significant differences between the groups on symptoms of sexual well-being, vigor, fatigue or levels of cortisol or estradiol. The ashwagandha was taken daily as two 300 mg tablets (taken 2 hours from a meal) providing a total of 21 mg of withanolide glycosides. The tablets were made from an ashwagandha extract (Shoden® beads, Arjuna Natural Ltd. — which funded the study but was not otherwise involved) (Lopresti, Am J Men Health 2019).

Sexual function in women

A 2-month study in 50 women ages 21 to 50 in India with low sexual desire and/or arousal found those who took 300 mg of ashwagandha extract after eating, twice per day, had significant improvements in overall sexual function, including arousal, lubrication, and satisfaction compared to placebo; although there was not a significant improvement in sexual desire. No adverse effects were observed (Dongre Biomed Res Int 2015). The researcher's theorized that ashwagandha may improve sexual function in women by reducing stress and potentially increasing testosterone levels (as has been shown in men), although this was not measured in the study. The extract used was *KSM-66* from Ixoreal Biomed, containing 5% withanolides. (Products containing this extract were tested in this Review, however, they did not pass CL's testing, as they contained lower than expected amounts of withanolides).

Peri- and postmenopausal symptoms

Two studies in India have shown small to modest benefits with ashwagandha root extract for symptoms of menopause.

A study of 123 **postmenopausal women** (average age 51) showed that taking 125 mg or 250 mg of ashwagandha root and plant extract (*Sensoril* by Kerry Group) twice daily for 6 months improved menopause-specific quality of life score, respectively, by 0.9 points and 1.27 points (on a scale of 1 to 8) compared to baseline, and these improvements were significant compared to the placebo group, which showed no significant improvement. Biomarkers of bone resorption also improved for those in both groups compared to placebo, although only those in the higher-dose (250 mg 2x/day) group showed increased bone mineral density at the lumbar spine compared to placebo. Neither ashwagandha group showed increased bone mineral density of the femoral neck, an area of hip fracture risk (Pingali, J Menopausal Med 2025).

A shorter, 8-week study among 91 **perimenopausal women** (average age 47) found that 300 mg of ashwagandha root extract (KSM-66, as discussed above) taken twice daily (providing a total daily dose of 600 mg of extract containing 30 mg of withanolides) *slightly* reduced total symptom severity scores (average decrease of 3.37 points vs. a decrease of 1.16 points with placebo on a 44-point scale) based on symptoms such as mood, vaginal dryness, urinary frequency, sweating and heart palpitations. Participants who took ashwagandha also had, on average, one less hot flash per day than those who took a placebo. In addition, blood levels of estradiol increased and levels of follicular stimulating hormone (FSH) decreased in those who took ashwagandha compared to placebo. There was no significant change in blood levels of testosterone (Gopal, J Obstet Gynaecol Res 2021).

Thyroid function

A study in India found that ashwagandha improved thyroid function in men and women with **subclinical hypothyroidism**, defined as mildly to moderately elevated TSH levels (4.5 — 10 mIU/L) and normal levels of T3 and T4. Compared to placebo, those who took 300 mg of highly concentrated ashwagandha root extract (standardized to 5% withanolides) twice daily (total daily dose of 600 mg extract containing 30 mg of withanolides) for two months had an average decrease in TSH of 1.85 mIU/L and increases in T3 and T4 averaging 0.5 nmol/L and 18.8 nmol/L, respectively. (Sharma, J Altern Complement Med 2017). (The extract was *KSM-66* from Ixoreal Biomed; see "Sexual Function in Women" above for products that contain this extract.)

There is also evidence that ashwagandha may increase the effects of thyroid medications, and may affect thyroid hormone levels even in people without thyroid disease (See Concerns and Cautions).

Cognitive performance

There is mixed evidence as to whether ashwagandha improves cognitive performance, although extracts that have shown some benefit typically provided at least 30 mg of withanolides daily (and up to 100 mg may be better). It may take at least two months to experience a benefit.

A study in India among healthy men found that taking two 250 mg capsules of ashwagandha extract with a glass of water each morning and evening (providing a total daily dose of 1,000 mg ashwagandha leaf and root extract (*Sensoril*, Natreon, USA0 with at least 100 mg of withanolides) for 12 days significantly improved cognitive performance and reaction times compared to placebo (Pingali, Pharmacognosy Res 2014).

Another study in India among men and women with mild cognitive impairment (average age of 50) found that taking 300 mg of ashwagandha root extract (*KSM-66* from Ixoreal Biomed, USA) twice daily (providing a total daily dose of 600 mg containing 30 mg of withanolides) for 8 weeks significantly improved many aspects of immediate and general memory, executive function, sustained attention, and information processing speed compared to placebo (which showed lesser improvements). Most improvements were not significant relative to placebo after 4 weeks and required 8 weeks. There was no significant effect on visuospatial processing, i.e., drawing images from memory and comparing rotated images (Choudhary, J Diet Supp, 2017). However, a study in India and Australia that assessed the same dosage of this product among 114 adults (average age 43) with *self-reported* memory or attention problems, as well as self-reported low energy, showed that, after 8 weeks, KSM-66 did *not* significantly improve measures of spatial memory or speed of processing compared to placebo. Episodic memory, working memory and accuracy of attention showed improvement compared to placebo based on certain tests, but not others (Kale, J Psychoactive Drugs 2024).

On the other hand, taking 225 mg of liposomal ashwagandha root and leaf extract providing approximately 9 mg of withanolides (*NooGandha*, by Specnova, which funded the study) once daily after breakfast for one month did *not* improve cognitive function compared to placebo in a study among 59 healthy adults ages 18 to 60 years old (average age 22), although ashwagandha *slightly* decreased "perceived" fatigue and tension (Leonard, Nutrients 2024).

Physical performance

A small study in healthy men and women ages 18 to 25 found that a daily dose of 500 mg of ashwagandha root extract (% withanolides not listed) taken one hour after a meal for 2 months significantly improved measures of physical performance and cardiovascular endurance, including velocity while sprinting, leg muscle strength, and VO_2Max (a measure of aerobic capacity) compared to placebo (Sandhu, Int J Ayurveda Res, 2010). Similarly, a study of 38 recreationally active young men who began a resistance exercise program four days per week and took 500 mg of a standardized aqueous extract of ashwagandha roots and leaves with cold water every morning for three months increased upper and lower body strength compared to the same exercise regimen plus placebo. The extract, *Sensoril* (from Natreon, which funded the study), has a particularly high concentration of withanolides (no less than 10%) — providing at least 50 mg of withanolide glycosides per day (Ziegenfuss, Nutrients 2018). (*Sensoril* is used in *Life Extension Optimized Ashwagandha*, but, in this Review, we found it to contain a much lower concentration of withanolides than expected.)

A study in India among 50 healthy, athletic men and women (average age 29) found that 300 mg of ashwagandha root extract (standardized to provide at least 15 mg of withanolides) taken twice daily for two months modestly improved cardiorespiratory endurance (as measured by VO_2 max) during a 12-minute run test compared to placebo. Those who took ashwagandha also reported modest improvements in exercise recovery (e.g., perceived exertion and fatigue) and reduced perceived general stress compared to placebo. The manufacturer of the extract used in the study (*KSM-66*, Ixoreal Biomed Inc), provided the extract used in the study, but did not fund the study. This extract is in several products in this Review, although ConsumerLab found none contained the expected amount of withanolides based on USP test methods (Tiwari, J Ethnopharmacol 2021).

However, not all studies show significant benefit of ashwagandha for physical performance and recovery. A study in Spain among 30 female professional soccer players (average age 25) showed that taking 600 mg of ashwagandha root extract (*KSM-66* by Ixoreal Biomed, which supplied the supplement but did *not* fund the study) daily for 4 weeks did *not* significantly increase explosive power or upper or lower body strength during regular training exercises, nor did it reduce perceived exertion and fatigue following the exercises

compared to placebo. Those taking ashwagandha reported somewhat better recovery after playing a soccer game compared to the placebo group, but the improvement was small (0.7 points on a scale of 6 to 20) and there was no significant reduction in stress, fatigue or muscle soreness after the game (Coope, Eur J Sport Sci 2025).

Anti-inflammatory effects

Ashwagandha may have anti-inflammatory and analgesic properties. This was demonstrated in a small but well-controlled study in India that also used Sensoril. In the study, people with joint pain and discomfort from knee osteoarthritis took capsules containing 250 mg of extract, 150 mg of extract, or a placebo twice a day for 12 weeks. Significant reductions were observed on measures of pain, stiffness, and disability at both doses, although the 250 mg group showed earliest efficacy — at just 4 weeks. There were no adverse effects reported and no one dropped out of the study, although side effects were most common in the 250 mg group -- 20% of whom reported nausea. (Ramakanth, J Aruv Integ Med 2016) [The higher dose (250 mg) of extract used in this study would provide at least 50 mg of withanolides.]

Another clinical study found that two capsules (each containing 450 mg of ashwagandha root, 50 mg zinc complex, 100 mg of guggul and 50 mg of turmeric) taken 3 times daily for three months significantly reduced pain among patients with osteoarthritis, but no improvements were seen on x-ray (Kulkarni, J Ethnopharmacol 1991). Because the product contained a number of ingredients, it's not possible to know what the effect of ashwagandha alone might have been.

Quality Concerns and Tests Performed:

In 2014, only 2 out of 8 ashwagandha supplements selected for review by ConsumerLab passed testing, indicating a major problem with quality in this category. The problem was found to persist in 2018, when only 5 out of 9 products passed testing, with the other four failing to be Approved due to low levels of withanolides. Neither the Food and Drug Administration (FDA) nor any other federal or state agency routinely tests ashwagandha supplements for quality prior to sale.

To help consumers identify quality products, ConsumerLab.com once again purchased and tested ashwagandha supplements to determine whether they contained the labeled and expected amounts of withanolides and withanosides (referred to collectively in this report as withanolides). Products containing whole herbs or 250 mg minerals were tested to determine if they exceeded contamination limits for lead, arsenic, cadmium, and mercury. All products in regular tablet/caplet form underwent disintegration testing to check if they would break apart properly in solution. ConsumerLab.com also determined whether the label recommended dose provided at least 6 mg of withanolides.

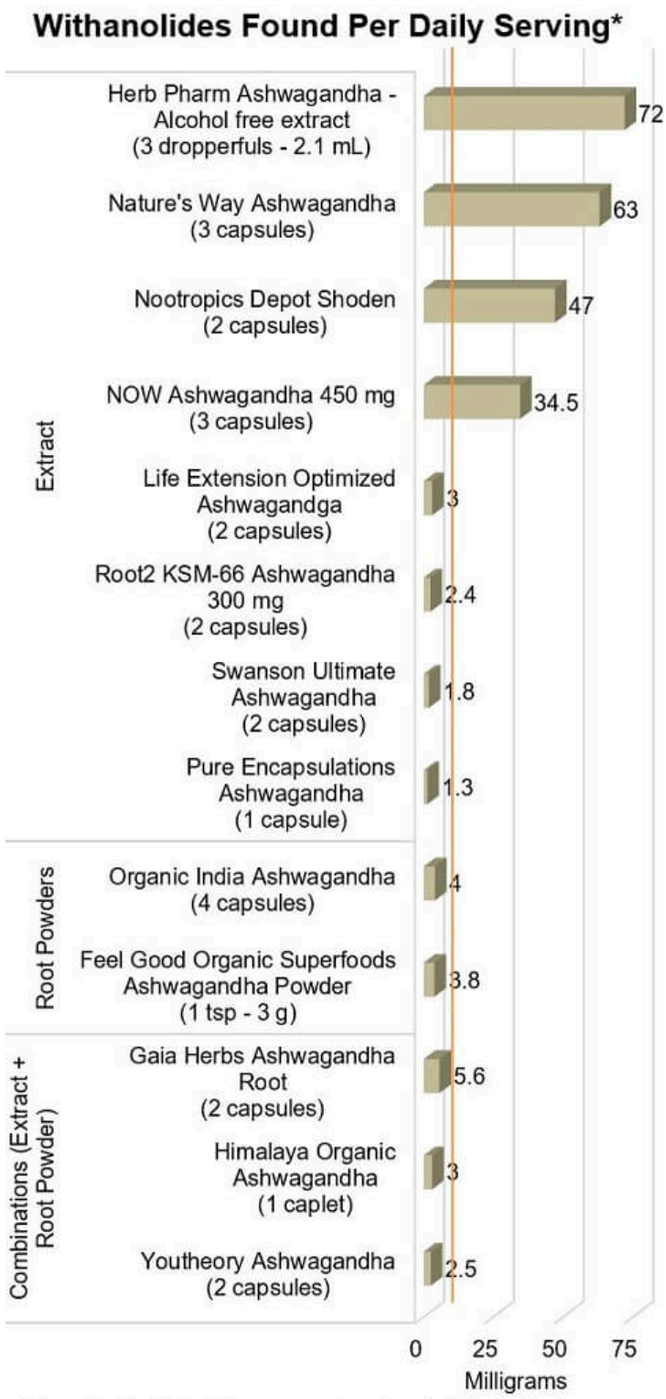
See How Products Were Evaluated for more information on testing.

What CL Found:

Only 5 of 13, or 38%, of ashwagandha supplements selected for review by ConsumerLab passed testing and were Approved for Quality. Eight products failed because our tests revealed them to contain much lower amounts of ashwagandha withanolides than expected, and this was confirmed in a second independent laboratory.

Quality & Withanolides

Among the products, the amount of withanolides per daily serving (which should be at least 6 mg --- and most clinical studies have used 10 to 30 mg) ranged from just **1.3 mg to 72 mg**, as shown in the graph below. In fact, **nine of the products provided less than 6 mg per day** (i.e., those with bars ending to the left of orange line in the graph). All products made with root powder or other whole botanical ingredients (including rice powder) were checked for heavy metals and passed that testing and all tablets/caplets were able to properly disintegrate.



Not Approved Products

***Eight* of the ashwagandha supplements failed to contain their claimed amount of withanolides or a minimum expected amount if no amount was claimed**. For this reason, these products were *Not* Approved for quality by ConsumerLab.

ConsumerLab expected ashwagandha root powders to provide at least 0.3% withanolides, per the USP. For extracts, ConsumerLab expected a minimum of 1.5% withanolides, an industry standard, and this is lenient, as the USP minimum is higher, at 2.5%.

It is interesting to note that the producer of the branded ashwagandha extract **KSM-66**, Ixoreal, claims that this extract is at least 5% withanolides. However, every product listing KSM-66 (*Root2*, *Swanson*, and *Youtheory*) was found by ConsumerLab to contain a much lower concentration. The same was true of *Jarrow Formulas Ashwagandha* and *ProHealth Optimized Ashwagandha*, which both claimed to contain KSM-66, when tested by ConsumerLab in 2018 (when *Himalaya Ashwagandha* also failed to meet ConsumerLab's minimums). In 2018, Ixoreal claimed that the USP method is not appropriate for testing KSM-66. In correspondence with ConsumerLab at that time, Ixoreal claimed that KSM-66 is "a full-spectrum water-based extract" that contains a "different set of withanolides and in higher quantities than other extracts of ashwagandha and USP is still in the process of updating its monograph to treat such extracts and compiling the corresponding standards." Ixoreal Biomed's own method apparently analyzes for withanolides numbered 1 through 6, but it is unclear what these compounds are or how they differ from those covered in the USP method. However, as of May 2024, the USP monograph remains as it was in 2018, with no adoption of the changes alluded to by Ixoreal.

The specific reason why each of eight products was *Not* Approved is described below:

- *Life Extension Optimized Ashwagandha Extract* provided only 3 mg of withanolides per suggested serving of one capsule taken *twice* daily. Each 1-capsule serving claimed to provide 12.5 mg of withanolide glycoside conjugates (i.e., withanolides with

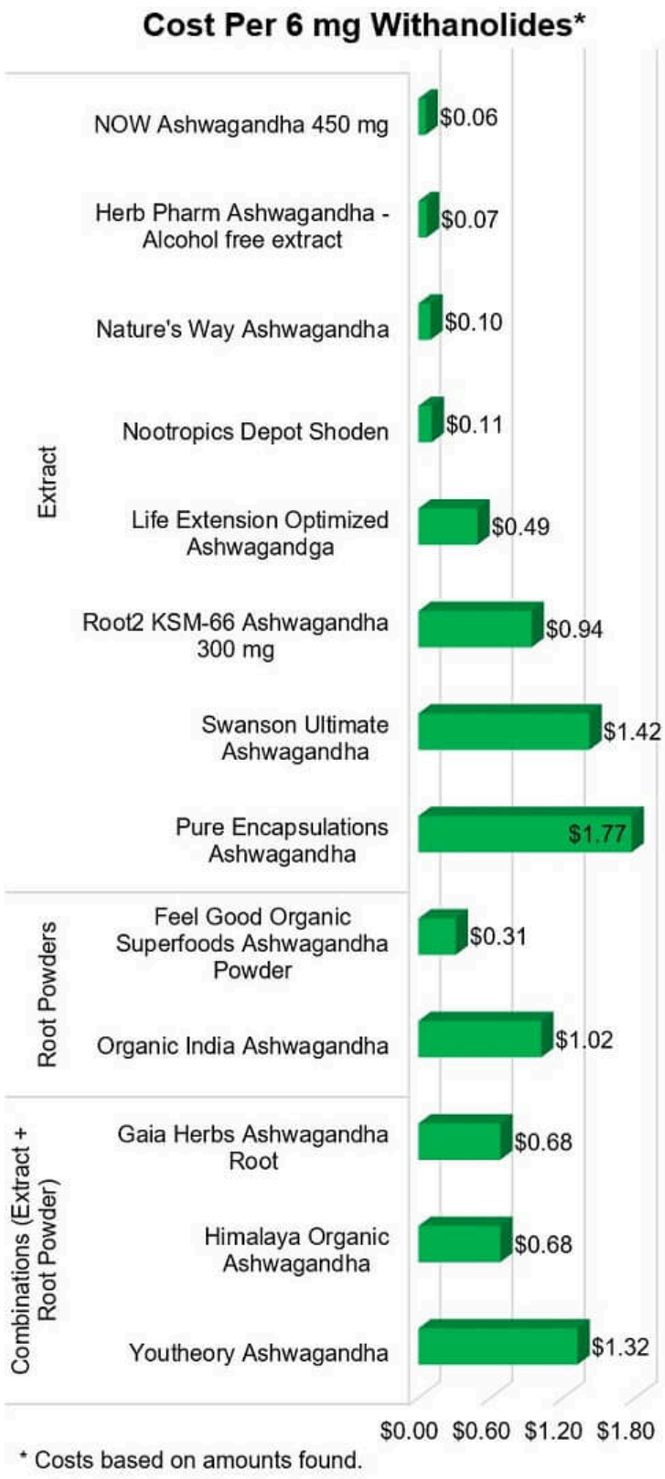
attached sugar molecules, also known as withanosides) from 125 mg of extract yet provided only 1.5 mg of this amount — only 12% of what was expected. (This product also failed to be Approved in 2018, when CL found it to contain just 6.3% of the expected amount. We do not normally select products for review if they failed in a prior review, as our goal is to find the best quality products, but this product was very popular in a recent CL member survey.) *Life Extension* is made with the branded extract, Sensoril, which has been described as being standardized to "not less than 10% withanolide glycosides" (Pingali, Pharmacognosy Res 2014), as is claimed on the *Life Extension* label, but we found it standardized to only 1.2%.

- *Nootropics Depot Shoden* provided a substantial amount of withanolides (23.5 mg per capsule), but this was only 56% of its claimed 42 mg, so it could not be Approved for quality. **Shoden** is another branded form of ashwagandha extract, made from root and leaf, and the label claimed that the 120 mg of extract per capsule was 35% withanolides, which we did not find to be true. (See **Update**)
- *Pure Encapsulations Ashwagandha* provided only 1.3 mg of withanolides per capsule despite claiming 12.5 mg — just 10.6% of what was expected.
- *Root2 KSM-66 Ashwagandha 300 mg* provided only 1.2 mg of withanolides per capsule despite claiming 15 mg — just 7.8% of what was expected.
- *Swanson Ultimate Ashwagandha*, made with KSM-66 extract, provided only 0.88 mg of withanolides per capsule, which is well below the minimum expected amount of 3.8 mg and even further below what one might expect from a product made from KSM-66.
- *Feel Good Organic Superfoods Ashwagandha Powder* provided only 3.8 mg of withanolides per teaspoon (3 gram) serving, which was less than half the expected minimum amount from this serving of ashwagandha root powder.
- *Organic India Ashwagandha* fell slightly short withanolides, providing 2.0 mg rather than the expected minimum of 2.4 mg expected in an 800 mg (2 capsule) serving of ashwagandha root powder.
- *Youtheory Ashwagandha* provided only 2.5 mg of withanolides per 2-capsule serving, which was only 24.9% of the minimum expected amount of 10.2 mg from its 600 mg of extract (KSM-66) and 400 mg of root powder. In fact, even more might be expected since KSM-66 is supposed to be at least 5% withanolides.

Cost

Based on the amounts of withanolides that we found in testing, we compared the cost of obtaining an equal amount (6 mg) of withanolides from each product, to help determine which provided the greatest value.

Not surprisingly, products that provided the greatest amounts of withanolides per serving tended to have a lower cost for withanolides. **The lowest cost was 6 cents from *NOW***, followed closely by *Herb Pharm* at 7 cents. In contrast, the cost was *over $1* for *Root2* ($0.94), *Organic India* ($1.02), *Youtheory* ($1.32), *Swanson* ($1.42), and **a whopping $1.77 from *Pure Encapsulations*** *— 29.5 times the cost from NOW.*



Top Picks:

Of the five ashwagandha supplements that were Approved for quality in our tests, two could not be considered a *Top Pick*, as they provided somewhat low daily doses (under 6 mg) of withanolides (*Gaia Herbs Ashwagandha Root* and *Himalaya Organic Ashwagandha*). Among the remaining three, we have **two *Top Picks*** — one as an extract in a capsule **(*NOW Ashwagandha 450 mg*)** and the other as an extract in a liquid **(*Herb Pharm Ashwagandha*)**. The third, *Nature's Way Ashwagandha*, remains a good choice but is slightly more expensive, based on the cost of obtaining ashwagandha withanolides.

We have no *Top Pick* among pure ashwagandha root *powders*, as none passed testing.

Ashwagandha Extract in a Pill: *NOW Ashwagandha 450 mg*

NOW provides nearly exactly the claimed 11 mg of withanolides per capsule — we found 11.5 mg. It does this at very low cost — 12 cents per capsule ($10.40 for 90 capsules). Its label suggests taking 2 to 3 capsules daily, which is an appropriate dose, yielding 22 to 33 mg of withanolides — consistent with the range used in clinical trials.

Note that *NOW* uses an extract made from both the root and leaf of ashwagandha, as is the case with products made with the branded extracts *Sensoril* (in *Life Extension*) and *Shoden* (in *Nootropics*). The array of compounds in the leaf may differ somewhat from that in the root. However, there is insufficient clinical evidence as to whether extracts that include leaf are better or worse than those made only with root.

Although not tested in this Review, *GNC Ashwagandha Extract 470 mg* was Approved when tested by us in 2018. The product is made from root extract, contained 7.2 mg of withanolides per daily capsule (it is standardized to 1.5% withanolides), and was considered a *Top Pick*. We do not know its current quality but have no reason to believe it has changed.

Ashwagandha Liquid Extract: *Herb Pharm Ashwagandha*

Each serving ("one squeeze of the dropper bulb" (0.7 mL)) of this liquid extract was found to provide a substantial dose of withanolides — 24 mg -- and costs 29 cents ($12.40 per 30 mL bottle). The label suggests that this be mixed in 2 ounces (1/4 cup) of water or juice. When mixed in water, the extract imparts a slightly sweet, herbaceous, and malty flavor. Some of the sweetness may come from vegetable glycerin which, along with distilled water, are the only listed ingredients other than ashwagandha root extract. The label suggests that this dose be taken between meals two to three times per day, which would provide 48 to 72 mg of withanolides per day. This is higher than used in most clinical trials. It may be prudent to use a smaller and/or less frequent dosing than the label suggests.

Cautionary Note:

There have been scattered **reports of liver injury** associated with use of ashwagandha supplements, including several reports involving ashwagandha from *NOW* and one involving *Nature's Way*. As discussed in **Concerns and Cautions**, until more is known and long-term safety studies are conducted, ashwagandha **should not be used by people with liver disease**. As cases have also been reported in people *without* a history of liver disease, it may be prudent to use lower daily doses than suggested on labels for products providing relatively high amounts of withanolides.

Test Results by Product:

Listed below are the test results for 13 ashwagandha supplements selected for testing by ConsumerLab.com. Products are grouped as extracts, powders, and combinations, and arranged alphabetically within each group.

Products listed as "Approved" in the first column were found to contain the expected amounts of withanolides and meet ConsumerLab.com's other criteria for quality (see Passing Score). The 2nd column shows the claimed amounts of ashwagandha root power or extract per serving of each product, the expected amounts of withanolides in that serving, and the actual amount found. Levels of heavy metals found are included in that column. Product descriptions and daily suggested servings are shown in the 3rd column. Cost comparisons and pricing are shown in the 4th column. Notable listed features and precautions are shown in the 5th column. The final column shows the full list of ingredients per serving as well as other listed ingredients in the product.

Results of ConsumerLab.com Testing of Ashwagandha Supplements

(Price Checks are not included in printed reviews)

Approval Status **Product Name**	**Claimed Amount Ashwagandha and Withanolides** **Heavy Metals**	**Pill Size** **Suggested Serving on Label**	**Cost Per Suggested Serving** **[Cost Per 6 mg Withanolides *Found*]**	**Notable Features and Precautions on Label**	**Full List of Ingredients Per Serving**
Extracts:					

APPROVED Herb Pharm® Ashwagandha - Alcohol free extract  Dist. by Herb Pharm	1 dropperful [0.7 mL] 833 mg extract (Extraction rate 175 mg herb per 0.7 mL. Dry herb / menstruum ratio: 1:4) 0.53 mg withanolides [Found **24 mg** withanolides ✔] **Heavy Metals:** Pass Lead: 0.001 mcg Arsenic: Cadmium: Mercury:	Shake well before using. Adults: Add 1 squeeze of the dropper bulb to 2 oz. of water or juice, 2 or 3 times per day. Best taken between meals. *Taste: Brown liquid, mixes easily in water, imparting a slightly sweet, herbaceous, malty flavor. (Some of the sweetness* *Additional Information* *Shake well before using. Adults: Add 1 squeeze of the dropper bulb to 2 oz. of water or juice, 2 or 3 times per day. Best taken between meals.* *Taste: Brown liquid, mixes easily in water, imparting a slightly sweet, herbaceous, malty flavor. (Some of the sweetness may come from vegetable glycerin in the liquid.)*	$0.29/dropperful [**$0.07**] $12.40/1 fl oz [30 mL] glass bottle (approx. 43 servings)	*USDA Organic seal. Gluten-Free. Certified Organic. Alcohol-free.*	1 dropperful Total Carbohydrate <1 g, Ashwagandha root (*Withania somnifera*) extract 833 mg. Other Ingredients: Certified organic vegetable glycerin & distilled water.
NOT APPROVED Life Extension® Optimized Ashwagandha  Dist. by Quality Supplements and Vitamins, Inc.	1 vegetarian capsule 125 mg extract (Sensoril®) 12.5 mg withanolides [Found only **1.5 mg** withanolides (just 12.3% of claimed amount)] **Heavy Metals:** Pass Lead: 0.02 mcg Arsenic: 0.07 mcg Cadmium: 0.007 mcg Mercury: 0.0003 mcg	Large vegetarian capsule Take one (1) capsule twice daily on an empty stomach, or as recommended by a healthcare practitioner.	$0.13/vegetarian capsule [$0.49] $7.50/60 vegetarian capsules	*Gluten Free. Non GMO.*	1 vegetarian capsule Sensoril® Ashwagandha extract (root and leaf) [std. 32% oligo-saccharides, 10% withanolide glycoside conjugates] 125 mg. Other Ingredients: Microcrystalline cellulose, vegetable cellulose (capsule), rice fiber, maltodextrin, silica, vegetable stearate.

APPROVED Nature's Way® Ashwagandha  Dist. by Nature's Way Brands, LLC	1 vegan capsule 500 mg extract 17.5 mg withanolides [Found **21 mg** withanolides ✔] **Heavy Metals:**	Large vegan capsule Take 1 capsule, two to three times daily, preferably with food or water.	$0.36/vegan capsule [**$0.10**] $21.49/60 vegan capsules	*Vegan, Gluten Free, Non-GMO. No wheat, corn, soy, dairy, Gelatin or artificial colors or flavors. Bottle Made From 97% Post-Consumer Recycled Plastic.* Quality Global Sourcing Bottle & Tested In The USA.	1 vegan capsule Ashwagandha Root Extract [standardized to 3.5% withanolides (17.5 mg)] 500 mg. Other Ingredients: Plant-derived capsule Additional Information 1 vegan capsule Ashwagandha Root Extract [standardized to 3.5% withanolides (17.5 mg)] 500 mg. Other Ingredients: Plant-derived capsule (hypromellose), cellulose, magnesium stearate, calcium silicate, silica.
NOT APPROVED Nootropics Depot Shoden®  Mfd. by Nootropics Depot	1 capsule 120 mg extract (Shoden®) 42 mg withanolides [Found only **23.5 mg** withanolides (just 56% of claimed amount)] **Heavy Metals:**	Medium/large capsule Take 1 capsule 1-2 times daily.	$0.44/capsule [**$0.11**] $39.99/90 capsules	None.	1 capsule Shoden® Ashwagandha Extract (*Withania somnifera*) (root and leaf) (35% Withanolides) 120 mg. Other Ingredients: Microcrystalline Cellulose (filler), Silicon Dioxide Additional Information 1 capsule Shoden® Ashwagandha Extract (*Withania somnifera*) (root and leaf) (35% Withanolides) 120 mg. Other Ingredients: Microcrystalline Cellulose (filler), Silicon Dioxide (flow agent), Magnesium Stearate (flow agent), Vegetable Cellulose (capsules).

APPROVED Top Pick for Ashwagandha extract in a pill NOW® Ashwagandha 450 mg  Dist. by NOW FOODS	1 veg capsule 450 mg extract 11 mg withanolides [Found **11.5 mg** withanolides ✔] **Heavy Metals:** Pass Lead: 0.02 mcg Arsenic: 0.06 mcg Cadmium: 0.01 mcg Mercury:	Large veg capsule Take 1 capsule 2 to 3 times daily.	$0.12/veg capsule [**$0.06**] $10.40/90 veg capsules	*Non-GMO. Kosher. Vegetarian/ Vegan. Halal.* **Precaution:** Not manufactured with yeast, wheat, gluten, soy, milk, egg, fish, shellfish, tree nuts or sesame ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.	1 veg capsule Ashwagandha Extract (*Withania somnifera*) (Root and Leaf) (min. 2.5% Total Withanolides - 11 mg) 450 mg. Other Ingredients: Hypromellose (cellulose capsule), Stearic Acid (vegetable source), and Rice Flour.
NOT APPROVED Pure Encapsulations® Ashwagandha  Mfd. by Pure Encapsulations	1 capsule 500 mg extract 12.5 mg withanolides [Found only **1.3 mg** withanolides (just 10.6% of claimed amount)] **Heavy Metals:**	Large capsule Take 1 capsule daily, with or between meals, or as directed by a health professional.	$0.39/capsule [**$1.77**] $47.20/120 capsules	Certified Gluten-Free by Gluten-Free Certification Organization seal. Gluten-free, Non-GMO & Hypoallergenic.	1 capsule Ashwagandha (*Withania somnifera*) extract (root) (standardized to contain 2.5% withanolides) 500 mg. Other Ingredients: Hypoallergenic plant fiber Additional Information 1 capsule Ashwagandha (*Withania somnifera*) extract (root) (standardized to contain 2.5% withanolides) 500 mg. Other Ingredients: Hypoallergenic plant fiber (cellulose), vegetarian capsule (cellulose, water).

NOT APPROVED Root2 KSM-66® Ashwagandha 300 mg  Dist. by Vitacost.com®	1 capsule 300 mg extract (KSM-66®) 15 mg withanolides [Found only **1.2 mg** withanolides (just 7.8% of claimed amount)] **Heavy Metals:** Pass Lead: 0.04 mcg Arsenic: 0.05 mcg Cadmium: 0.02 mcg Mercury: 0.001 mcg	Large capsule As A Dietary Supplement For Adults, Take 1 Capsule Two Times Per Day Or As Directed By A Healthcare Professional.	$0.18/capsule [**$0.94**] $21.99/120 capsules	*Free of: Eggs, Peanuts, Tree Nuts, Crustacean Shellfish, Fish, Soy, Gluten, Titanium Dioxide. Non-GMO.* **Precaution:** Contains: Milk.	1 capsule Ashwagandha Extract (root) KSM-66® [standardized to 5% withanolides (15 mg)] 300 mg. Other Ingredient: Rice flour, hydroxypropyl methylcellulose, vegetable magnesium stearate and silicon dioxide.
NOT APPROVED Swanson® Ultimate Ashwagandha  Dist. by Swanson Health Products	1 veggie capsule 250 mg extract (KSM-66®) 3.8 mg withanolides [Found only **0.88 mg** withanolides (just 0.35% of extract)] **Heavy Metals:** Pass Lead: 0.04 mcg Arsenic: 0.08 mcg Cadmium: 0.02 mcg Mercury: 0.001 mcg	Large veggie capsule Take one veggie capsule one to two times per day with water.	$0.21/veggie capsule [**$1.42**] $12.49/60 veggie capsules	None.	1 veggie capsule KSM-66® Ashwagandha Extract (made with certified organic ashwagandha) (*Withania somnifera*) (root) 250 mg. Other Ingredients: Hypromellose (vegetarian capsule), rice bran, silica, magnesium stearate.
Root Powders:					

NOT APPROVED Feel Good® Organic Superfoods Ashwagandha Powder  Dist. by APAX USA, Inc.	1 tsp [3 g] 3,000 mg root powder 9 mg withanolides [Found only **3.8 mg** withanolides (just 0.13% of root powder)] **Heavy Metals:** Pass Lead: 0.44 mcg Arsenic: 0.27 mcg Cadmium: 0.12 mcg Mercury: 0.003 mcg	Add 1 tsp (3 g) to a superfood smoothie, stir into yogurt or use in baked goods or other recipes for a healthy boost. *Taste: Light brown powder, mixes easily in water, imparting a mildly herbaceous and slightly sweet flavor. No ingredients other than ashwagandha root listed* *Additional Information* *Add 1 tsp (3 g) to a superfood smoothie, stir into yogurt or use in baked goods or other recipes for a healthy boost.* *Taste: Light brown powder, mixes easily in water, imparting a mildly herbaceous and slightly sweet flavor. No ingredients other than ashwagandha root listed. Label suggests mixing into a smoothie, yogurt, or baked good.*	$0.20/tsp [**$0.31**] $29.99/16 oz [453 g] jar (approx. 151 servings)	*USDA Organic seal. Quality Assurance International seal. Vegan-Friendly. Gluten Free. Non-GMO.* **Precaution:** Packaged in a facility that also processes tree nuts and seeds.	1 tsp Organic Ashwagandha (*Withania somnifera*) 3,000 mg. Other Ingredients: None.
NOT APPROVED Organic India® Ashwagandha  Mfd. by Organic India Pvt. Ltd.	2 vegetarian caps 800 mg root powder 2.4 mg withanolides [Found only **2 mg** withanolides (0.25% of root powder)] **Heavy Metals:** Pass Lead: 0.06 mcg Arsenic: 0.02 mcg Cadmium: 0.01 mcg Mercury:	Large vegetarian cap 2 caps twice daily with food and water.	$0.34/2 vegetarian caps [**$1.02**] $30.99/180 vegetarian caps	*Non GMO Project Verified seal. Vegan, Gluten Free, USDA Organic seal.* Product of India. **Precaution:** Warning: Reproductive Harm - .	2 vegetarian caps Organic Ashwagandha (*Withania somnifera*) (root) 800 mg. Other Ingredients: Organic Vegetable Pullulan Capsules.
Combinations (Extract + Root Powder):					

APPROVED **Low Dose** Gaia Herbs® Ashwagandha Root  Dist. by Gaia Herbs, Inc.	1 vegan liquid phyto-cap® Extract and root powder in 350 mg blend 2.5 mg withanolides [Found **2.8 mg** withanolides ✔] [Note: low dose (<6 mg withanolides per daily serving)] **Heavy Metals:** Pass Lead: 0.02 mcg Arsenic: 0.05 mcg Cadmium: Mercury:	Large vegan liquid phyto-cap® Adults take 1 capsule 2 times daily.	$0.31/vegan liquid phyto-cap® [**$0.68**] $37.51/120 vegan liquid phyto-cap®	*Vegan. Gluten Free, Dairy Free, Soy Free.*	1 vegan liquid phyto-cap® Total Carbohydrate <1 g, Proprietary Extract Blend [Organic Ashwagandha (*Withania somnifera*) root, Ashwagandha (*Withania somnifera*) root extract [Withanolides 2.5 mg]] 350 mg. Other Ingredients: Vegetable glycerin, water Additional Information 1 vegan liquid phyto-cap® Total Carbohydrate <1 g, Proprietary Extract Blend [Organic Ashwagandha (*Withania somnifera*) root, Ashwagandha (*Withania somnifera*) root extract [Withanolides 2.5 mg]] 350 mg. Other Ingredients: Vegetable glycerin, water and vegan capsule (hypromellose).

APPROVED **Low Dose** Himalaya® Organic Ashwagandha  Dist. by Himalaya Wellness USA, Ltd.	1 caplet 280 mg extract 10 mg supercritical CO_2 extract 380 mg root powder 2.96 mg withanolides (1.4 mg from extract, 0.8 mg from supercritical CO_2 extract and 0.76 mg from powder) [Found **3 mg** withanolides ✔] [Note: low dose (<6 mg withanolides per daily serving)] **Heavy Metals:** Pass Lead: 0.11 mcg Arsenic: 0.13 mcg Cadmium: 0.02 mcg Mercury:	Medium/large caplet Adults take 1 caplet per day before food.	$0.34/caplet [**$0.68**] $20.49/60 caplets	*Non GMO Project Verified seal. USDA Organic seal. Gluten Free. Vegan Friendly. No Wheat. No Corn. No Soy. No Dairy. No ingredients of animal origin.* Product of India.	1 caplet Organic ashwagandha powder (root) (0.2% Withanolides, 0.76 mg) 380 mg, Organic ashwagandha extract (root) (0.5% Withanolides, 1.4 mg) 280 mg, Organic ashwagandha supercritical CO_2 extract (root) (*Withania somnifera*) (8% Withanolides, 0.8 mg) 10 mg.

NOT APPROVED Youtheory® Ashwagandha  Mfd. by Nutrawise®	2 vegetarian capsules 600 mg extract (KSM-66®) 400 mg root powder 10.2 mg withanolides [Found only **2.5 mg** withanolides (just 24.9% of expected minimum)] **Heavy Metals:** Pass Lead: 0.36 mcg Arsenic: 0.16 mcg Cadmium: 0.07 mcg Mercury: 0.001 mcg	Large vegetarian capsule (Adults) Take two (2) capsules per day with water.	$0.56/2 vegetarian capsules **[$1.32]** $16.76/60 vegetarian capsules	Ginger extract 20 mg per 2 vegetarian capsules *Non GMO Project Verified seal. Dairy free. Soy free. No gluten ingredients.* **Precaution:** This product is manufactured in a facility that processes fish extracts.	2 vegetarian capsules Full Spectrum Ashwagandha Blend [Organic Ashwagandha (root) extract (KSM-66®) 600 mg, Organic Ashwagandha (root) powder 400 mg] 1,000 mg, Ginger (root) extract (Gingever) 20 mg. Other Ingredients: Vegetarian capsule (hypromellose), microcrystalline cellulose Additional Information 2 vegetarian capsules Full Spectrum Ashwagandha Blend [Organic Ashwagandha (root) extract (KSM-66®) 600 mg, Organic Ashwagandha (root) powder 400 mg] 1,000 mg, Ginger (root) extract (Gingever) 20 mg. Other Ingredients: Vegetarian capsule (hypromellose), microcrystalline cellulose, vegetable magnesium stearate, silicon dioxide.

Products tested in 2024

ConsumerTips™:

Choose an ashwagandha supplement that lists its amount of withanolides (either as a percentage of the amount of ashwagandha or a milligram amount). Products made from root *powder* should contain a minimum of 0.3% (wt/wt) total withanolides and *extracts* should contain at least 1.5% (wt/wt) total withanolides. In fact, the United States Pharmacopeia requires no less than 2.5%, and some proprietary extracts, such as KSM-66, claim to be 5%. Look for products that provide a minimum of 6 mg of withanolides when taken at the number of servings suggested on the label, although be cautious, as noted earlier.

Extracts that have been enriched with additional "withanolide glycosides" may have greater bioavailability (i.e., ability to raise levels of withanolides in the blood) than regular extracts. This was demonstrated in a study that compared the branded extract *Shoden* (WS-35), which contains 40% withanolides including 35% withanolide glycosides, to a regular 2.5% withanolide extract. When taken only with water on an empty stomach, *Shoden* achieved about 18-times the withanolide blood levels of a much higher dose of the extract

calculated to deliver an equivalent amount of withanolides (Kim, Heliyon 2023). It should be noted, however, that the authors of the study included an employee of Arjuna Natural Ltd., which makes *Shoden*, and it is not known how these results would differ if the products had been taken with food instead of just water.

Extracts that have been enriched with additional "withanolide glycosides" may have greater bioavailability (i.e., ability to raise levels of withanolides in the blood) than regular extracts. This was demonstrated in a study that compared the branded extract *Shoden* (WS-35), which contains 40% withanolides including 35% withanolide glycosides, to a regular 2.5% withanolide extract. When taken only with water on an empty stomach, *Shoden* achieved about 18-times the withanolide blood levels of a much higher dose of the extract calculated to deliver an equivalent amount of withanolides (Kim, Heliyon 2023). It should be noted, however, that the authors of the study included an employee of Arjuna Natural Ltd., which makes *Shoden*, and it is not known how these results would differ if the products had been taken with food instead of just water. *Shoden* can be found in several ashwagandha supplements available in the U.S., including *Shoden Ashwagandha Extract Capsules* by Nootropics Depot, *Shoden Ashwagandha* by Solgar, *Advanced Ashwagandha* by Bestvite, and *Bio-Shoden* by Coyne Healthcare — none of these products have been tested yet by ConsumerLab.

There seems to be no consensus, or good evidence, as to whether ashwagandha is best taken with or without food, although products tend to suggest taking ashwagandha without food, such as "between meals."

Dosage:
Daily doses between 1,000 mg and 6,000 mg of ashwagandha root *powder* and from 60 mg to 1,500 mg of *extract* have typically been used in clinical studies. See the What It Does section for dosage details for specific medical uses.

Concerns and Cautions:

Ashwagandha is generally well tolerated. However, mild to moderate side effects including **headache, sleepiness, nausea, gastrointestinal upset, vomiting, or diarrhea** have been reported in some clinical studies (Ramakanth J Ayurveda Integr Med 2016; Chengappa, J Clin Psychiatry 2018).

Ashwagandha (*Withania somnifera*) is part of the *Solanaceae* family of plants, also known as "nightshades." In people who are **allergic to other nightshade plants** such as potato, eggplant, tomatoes and peppers, ashwagandha could potentially cause **allergic reactions such as rash, itching, nausea, wheezing or difficulty breathing**.

Burning, itching, and discoloration of the skin of the penis was reported in a man who took 5 grams of ashwagandha root powder for six days. Symptoms resolved when he stopped taking ashwagandha (although some skin discoloration remained), but returned when took ashwagandha again, suggesting what is known as a "fixed drug eruption" — when repeat exposure to a substance results in a new skin lesion as the same location that was previously affected — commonly the lips, hands, and genitalia (Sehgal, Skinmed 2012).

Ashwagandha should be used with caution in people with **hyperthyroidism** and people taking thyroid hormones, as it may increase the effects of these medications. Animal studies and a small study in people suggest ashwagandha may increase thyroid hormone levels (Panda, J Pharm Pharmacol 1998; Gannon, J Ayurveda Integr Med 2014), and there are case reports of ashwagandha causing thyrotoxicosis **(hyperthyroidism) in people not previously diagnosed with thyroid disease**, such as in a healthy woman in the Netherlands taking ashwagandha capsules for several weeks or more (van der Hooft, Ned Tijdschr Geneeskd 2005). Similarly, a healthy 62-year-old woman in the U.S. developed thyrotoxicosis after taking an ashwagandha supplement (*Physician's Choice Extra Strength Ashwagandha capsules -- 1,950 mg ashwagandha root + 15 mg black pepper extract*) daily for two months. She experienced trouble swallowing due to thyroid enlargement as well as anxiety and emotional outbursts, confusion, weight loss, weakness, increased resting heart rate, and became mildly anemic (which can occur with thyrotoxicosis). Approximately one month after stopping ashwagandha supplementation and receiving medical treatment, her thyroid hormone levels normalized, her symptoms improved, and she was no longer anemic (Curry, SSRN 2019). A 47-year-old Japanese man who was a bodybuilder and previously healthy developed painless thyroiditis (also known as silent thyroiditis) about two months after starting to take ashwagandha extract (dose not specified). Symptoms included fatigue, fever at night, weight loss (about 9 lbs), diarrhea, and headache. Blood tests showed elevated white blood cell count and C-reactive protein, as well as elevated thyroid hormones T3 and T4 (free triiodothyronine and thyroxine) and decreased thyroid stimulating hormone (TSH). The man's symptoms and abnormal thyroid markers normalized approximately 7 weeks after stopping supplementation (Hayashi, Cureus 2024).

Although rare, cases of **elevated liver enzymes and liver injury** have been reported with use of ashwagandha supplements. Three cases were reported in Iceland between 2017 and 2018 with NOW brand ashwagandha (450 to 1,350 mg of extract daily) and two cases were reported in the U.S. in 2016 -- one product was identified as *Nature's Way* brand. (Tests by ConsumerLab have found that both *NOW* and *Nature's Way Ashwagandha* provide substantial amounts of withanolides — more than most other ashwagandha products.) In these cases, symptoms including nausea, lethargy, itching, abdominal discomfort and jaundice occurred two to 12 weeks after beginning supplementation (daily dosage ranged from 450 mg to 1,350 mg from supplement brands *NOW* and *Nature's Way*) and resolved within one to six months after stopping supplementation. None of the cases resulted in liver failure (Bjornsson, Abstract in Gastroenterology

2019). [Note: *Nature's Way Ashwagandha* was reformulated around 2022 and is now standardized to "3.5%" withanolides rather than the previous "4%," claiming 17.5 mg per capsule rather than 20 mg, according to the current label on the company's website. ConsumerLab tests in 2018 and 2024 have shown a reduction, although the product still provides a substantial amount of withanolides.]

In another case, a 40-year-old man developed itching and jaundice, with a rise in liver enzymes and bilirubin in the blood, twenty days after beginning supplementation with *Now* brand ashwagandha (*Ashwagandha Now*, 450 mg per day). In the year prior to taking *Now*, the man had taken 500 mg daily of another brand of ashwagandha without any indication of liver injury and had no history of liver disease (Weber, Am J Gastroenterol 2021). Similarly, a 39-year-old woman in the U.K. experienced lethargy, itching, and abdominal pain, with increased levels of liver enzymes and bilirubin in the blood, after taking a supplement containing 154 mg of ashwagandha root extract per capsule (which is likely to have been *Dr. Dunner PhotoVitality*) every other day for six weeks. Tests revealed acute cholestatic hepatitis, and her physicians noted that the pattern of injury suggested an immune-related response to ashwagandha, rather than a direct toxic effect. The hepatis resolved two weeks after stopping supplementation and beginning medication to treat the liver inflammation (Ireland, J R Coll Physicians Edinb 2021). A review of medical records in India that identified 8 cases of ashwagandha-induced liver injury among adults (age range 31 to 75) found that most of the cases (5 out of 8) occurred among individuals with chronic liver disease. Among these individuals, ashwagandha had been taken in daily doses of 500 mg to 20 grams for between 2 weeks to 1.5 years prior to symptoms onset. In all cases, symptoms included jaundice and itching. In 75% of cases, liver injury was severe. Among the five patients with prior liver disease, three experienced liver failure and died during follow-up. Among the five ashwagandha products that could be obtained from the patients evaluated, none contained adulterants or other contaminants, suggesting that the adverse events were caused by natural compounds in ashwagandha (Philips, Hepatol Commun 2023). ***Until more is known and long-term safety studies are conducted, ashwagandha should not be used by people with liver disease*. As cases have also been reported in in people *without* a history of liver disease, it may be prudent to use lower doses of ashwagandha than suggested on labels for products providing relatively high amounts of withanolides.**

Some preliminary research suggests ashwagandha could potentially **lower blood pressure**. It should be used with caution in people with low blood pressure and in those taking medications to lower blood pressure, as it may enhance the effect of these medications. It may also have sedating effects and should not be used with other herbs or medications that cause sedation, or prior to receiving anesthesia.

Ashwagandha may **lower blood sugar levels**; it should not be used by people with diabetes or hypoglycemia except under physician supervision (Andallu, Indian J Exp Biol 2000).

It's possible that ashwagandha could affect **heart rhythm** in some people. Dizziness, rapid heartbeat (ventricular tachycardia) and fainting associated with the use of ashwagandha have been reported in two middle-aged men in India; however, no information about the source, brand or dose of ashwagandha was provided (Dwivedi, Trop Doct 2011).

Animal studies suggest that ashwagandha may stimulate the immune system and, therefore, could potentially decrease the effects of **immunosuppressant drugs** such as cyclophosphamide (Cytoxan, Neosar) and tacrolimus (Envarsus XR, Protopic, Prograf), and/ or trigger organ rejection in **organ transplant recipients** (Davis, J Ethnopharmacol 1998; Davis, Cancer Lett 2000). This was reported in a 69-year-old kidney transplant recipient in Canada who had been stable for two years after transplant while taking the immunosuppressants tacrolimus, mycophenolate sodium (Myfortic) and prednisone (Deltasone), but developed acute organ rejection that required removal of the kidney two weeks after he began taking two ashwagandha pills daily (brand and dose not provided) (Sriperumbuduri, Kidney Int Rep 2020).

Ashwagandha seems to **increase blood levels of serotonin** (Majeed, J Integr Complement Med 2024), which may increase the **risk of serotonin syndrome when used along with selective serotonin reuptake inhibitors (SSRIs)**. Such a reaction may explain the symptoms of serotonin syndrome (including uncontrolled movement of the arms and legs, eyelid flutter, fever, vomiting, pupil dilation, and fast heart rate) experience by a 22-year-old women two days after taking a high dose of ashwagandha (600 mg from a pill, 1,520 mg as tea) along with escitalopram (Lexapro, 10 mg daily). She was treated by discontinuing ashwagandha and escitalopram and receiving benzodiazepines and supportive care (Hanly-Jorda, Neurology 2025).

Due to its immune-stimulating effects, ashwagandha might also trigger symptoms in people with **autoimmune conditions**, as was reported in a woman with celiac disease and systemic sclerosis who developed blurred vision, eye pain, difficulty perceiving color, and temporary vision loss — symptoms of optic neuritis, a condition linked with autoimmune disorders — about 2 weeks after starting ashwagandha supplementation. Her symptoms resolved upon treatment with a corticosteroid and stopping supplementation (Norris, American College of Physicians Annual Scientific Meeting 2018).

Preliminary laboratory and animal studies suggest ashwagandha may have a blood-thinning effect. Until more is known, it should be used with caution in people taking **blood-thinning medications** such as aspirin, warfarin (Coumadin) or heparin, anti-platelet drugs such as clopidogrel (Plavix) (Ku, Vascul Pharmacol 2014; Madhusudan, Pharm Biol 2016).

There is some concern that ashwagandha could increase the risk of miscarriage in pregnant women; women who are **pregnant or nursing should not take this herb**.

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