

Ashwagandha Extract 450 mg

TECHNICAL SUMMARY

Ashwagandha (*Withania somnifera*) is an herb used extensively in traditional Indian Ayurveda. Ashwagandha's historical use as a general tonic is primarily due to its adaptogenic properties, meaning that it helps the body adapt to temporary physical and emotional stress.* Modern scientific data suggest that ashwagandha may also support healthy immune system function.*

Structure formula: Among the more than 35 chemical constituents isolated in ashwagandha root, withanolides, a group of steroidal lactones, are believed to be its main bioactive compounds.

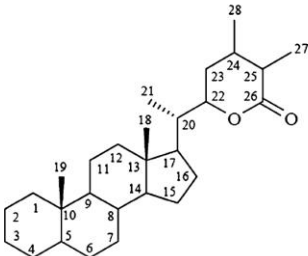


Figure 1: Withanolide skeleton.

Chemical name: The basic skeleton of withanolides is 22-hydroxyergostan-26-oic acid-26,22-lactone. Withaferin A (4 β , 27-dihydroxyl-1-oxo-5 β , 6 β -epoxywitha-2-24-dienolide) was the first member of this group of compounds to be isolated.

Allergen and Additive Disclosure: Not manufactured with yeast, wheat, gluten, soy, milk, egg, fish, shellfish or tree nut ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.

Delivery Form: Vegetable capsules

ROLE AS NUTRIENT/FUNCTION

Because of the complex makeup of bioactive compounds found in ashwagandha roots, their physiological functions have not yet been completely elucidated. Withanolides have been extensively studied and laboratory data suggest that they are involved in some of the following functional properties of ashwagandha:

- **CNS:** Data from laboratory experiments suggest that ashwagandha interacts with the GABA_A receptor system, as well as many other neurologic pathways.*
- **Immune support:** Withanolides are known to interfere with the nuclear factor-kappaB system and it may partially explain the effect of ashwagandha on the immune system.* Other data suggest that withanolides are involved in the regulation of the immune response favoring a specific pathway that increases macrophage functions.*
- **Oxidative damage:** In studies on animal models, ashwagandha was able to limit lipid peroxidation, superoxide dismutase activity and to enhance the activity of catalase and glutathione peroxidase.*

Supplement Facts

Serving Size 1 Veg Capsule

Amount Per Serving

Ashwagandha Extract (<i>Withania somnifera</i>) (Root)	450 mg*
(min. 2.5% Total Withanolides - 11 mg)	

* Daily Value not established.

Other ingredients: Hypromellose (cellulose capsule), Rice Flour and Magnesium Stearate (vegetable source).

- **Ayurvedic Adaptogen***
- **Immune System Support***

SUGGESTED USAGE: Take 1 capsule 2 to 3 times daily, or as directed by your healthcare practitioner.

These results are preliminary and only account for part of ashwagandha's biological activity.

NATUROKINETICS®

Liberation: Ashwagandha vegetable capsules disintegrate within 60 minutes in a USP water disintegration test.

Absorption: Data from animal models suggest a rapid absorption of withanolides. In a study performed on mice receiving 1000 mg/kg of an ashwagandha root water extract, T_{max} for withaferin A and withanolide A were respectively 10 and 20 minutes. Another study using a different model suggests that after oral absorption ashwagandha is well absorbed.

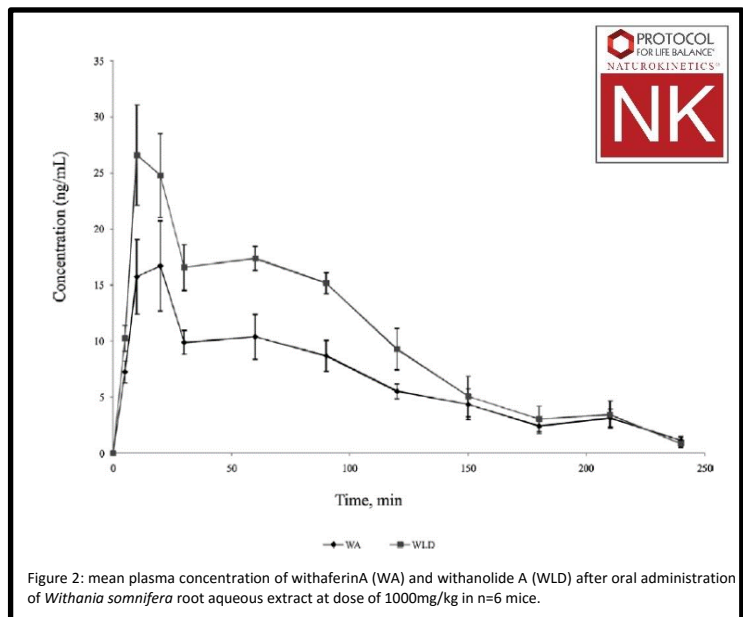


Figure 2: mean plasma concentration of withaferinA (WA) and withanolide A (WLD) after oral administration of *Withania somnifera* root aqueous extract at dose of 1000mg/kg in n=6 mice.

Distribution: The distribution of ashwagandha's bioactive compounds has not been evaluated. However, studies performed on model animals suggest that some of these bioactive compounds are able to pass the blood-brain barrier since physiologic changes are observed in the brains of animals ingesting ashwagandha extracts.*

Metabolism: Information regarding ashwagandha's metabolism in the body is not yet available.

Elimination: Data from animal models suggest that the clearance from plasma is rapid.

CLINICAL VALIDATION

- In a 12-week randomized, placebo-controlled clinical study on adult volunteers receiving a standardized ashwagandha extract at a daily dose of 600 mg (300 mg twice a day), the authors observed a significant improvement in fatigue (assessed with a self-evaluation fatigue questionnaire) in the ashwagandha group compared to baseline and placebo.* In this study, the ability to cope with stress was evaluated as a secondary endpoint using a 7-point visual analogue scale. Volunteers in the ashwagandha group described a significant improvement in their ability to cope with stress versus baseline and versus placebo.* Volunteers also showed improvements in their self-evaluation of quality of life (measured with SF-36 test).*

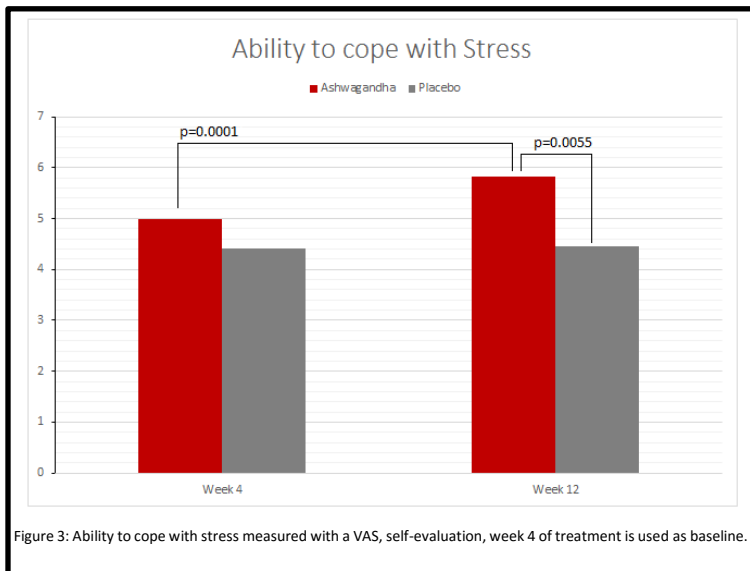


Figure 3: Ability to cope with stress measured with a VAS, self-evaluation, week 4 of treatment is used as baseline.

SAFETY INFORMATION

Tolerability: This product may cause digestive upset in some sensitive individuals.

Contraindications: Pregnant and nursing women.

INTERACTIONS

Drug Interactions: Theoretically, ashwagandha may interfere with barbiturates and anxiolytics including benzodiazepines. Caution is recommended when combining these medications and ashwagandha while driving or operating machinery.

Supplement Interactions: Theoretically, ashwagandha may potentiate supplements with sedative effects.

Interaction with Lab Tests: Some compounds found in ashwagandha may interfere with assays used to measure digoxin blood levels. This may result in falsely elevated digoxin levels, some test methods seem more affected than others.

Theoretically, ashwagandha might interfere with thyroid function testing by decreasing TSH, and increasing T₃ and T₄ values.

STORAGE

Store at ambient conditions in tightly sealed container.