

*Withania somnifera* (L.) Dunal  
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## ***Withania somnifera* (L.) Dunal**

**Local and common names:** ግዛዎ Gizawa, ጊዜዎ Gizewa (Amh); Kuumoo, Gizaawwaa (Oro); ኦጎል Agoll (Tig); Indian ginseng, Winter cherry, Poisonous gooseberry, Ashwagandha (Eng)

**Voucher number and identification:** GA054/AHRI/2025

**Synonyms:** *W. somnifera* is known by 27 synonyms, among which *W. chevalieri*, *W. somnifera* subsp. *obtusifolia* and *W. kansuensis* are the later published names.

**Varieties recorded in Ethiopia:** There are no interspecific taxa and officially registered varieties of *W. somnifera* in Ethiopia.

**Family:** Solanaceace

### **Botanical and habitat distribution**

*W. somnifera* is an erect, much branched perennial shrub or subshrub, typically reaching up to 2 m in height. The stem is branched. The roots are fleshy and cylindrical; when dried, they are whitish to pale brown, with a brownish outer surface and a creamy to yellow interior. The aerial parts are often covered with fine, grayish, woolly hairs. Leaves are simple, elliptic-ovate, dull green, and borne alternatively on the stem. The flowers are small, greenish-yellow, bell-shaped and produced in axillary clusters. The fruit is a smooth, spherical, orange-red berry that contains numerous seeds. The species occurs mainly in dry to seasonally moist open habitats at elevations ranging near sea level to up to about 2000-2300 masl.

### **Conservation status**

*W. somnifera* is not currently included in the IUCN Red List, although POWO reports that the species is not threatened, which broadly corresponds to the IUCN category of Least Concern.

### **Propagation method**

It is a drought-tolerant plant and grows in dry soil, once established. For cultivation, plant seeds 2 cm deep and 10 cm apart when the temperature is around twenty degrees. Seeds will germinate in two weeks.

## **Cultivation in botanic garden**

The plant was cultivated in the botanic garden in October 2024, from a whole plant dug up at the AHRI-ALERT Health Village (Accession number 0118).

## **Ethnomedicinal uses**

The root is chewed orally to treat cancer while the leaf powder is used to treat diarrhea whereas the decoction from the fresh leaves is also used to treat febrile illness. The aerial part is used in the management of extended flow of menstruation and gallstone, epilepsy, psychosis, and malaria. The root is used as diuretic, narcotic, astringent, thermogenic and aphrodisiac. The seed is used in hysteria, memory loss, anxiety and claimed to increase sperm count.

## **Major phytoconstituents**

Steroidal lactones such as withaferin A, withanolide A, 27-deoxywithaferin A, viscosalactone B, jaborosalactone D and 27-hydroxywithanolide B are among the major constituents reported from *W. somnifera* extracts.

## **Pharmacological and safety evidences**

### **Preclinical evidences**

***Antianxiety and antidepressant effects:*** *W. somnifera* root extract showed anxiolytic activity in rats. The extract also demonstrated an antidepressant effect comparable to imipramine.

***Antioxidant effect:*** In an *in vivo* study, *W. somnifera* increased the levels of several natural antioxidants, including glutathione peroxidase, superoxide dismutase, and catalase, on rat brains.

***Other pharmacological effects:*** Cardioprotective, antimalarial, and antidiarrheal effects, antidiabetic and cytotoxic.

### **Clinical evidences**

The hypoglycemic, diuretic, and hypocholesterolemic properties of *W. somnifera* root were evaluated in human participants. Six individuals with mild type-2 diabetes and six with mild hypercholesterolemia received root powder for 30 days. The reduction in blood glucose was comparable to that achieved with an oral hypoglycemic agent. Treatment also resulted in increased urinary sodium and volume, alongside significant reductions in serum cholesterol, triglycerides, LDL, and VLDL levels. No adverse effects were reported, suggesting the root's therapeutic

potential across these indications. However, the available clinical data are not considerably enough to provide novel and sufficiently robust evidence for the use of *W. somnifera* in managing DM.

Other trial including prospective open-label non-randomized comparative clinical trial which was conducted on patients with breast cancer, *W. somnifera* have shown a notable anticancer activity. Moreover, in a randomized control trial involving male with infertility problems, *W. somnifera* extract was shown to repair seminal plasma metabolites and recovers quality of semen.

### **Safety**

The oral administration of different extracts of the whole plant and parts of *W. somnifera* root extract up to 2000 mg/kg in rats did not show toxicity signs. *W. somnifera* is generally considered safe for most healthy adults when used in moderate doses for short periods (up to 3 months).

### **Products registration**

This plant has registered and commercially available herbal products named as ashwagandha tincture.

### **Research gaps and recommendation**

As medicinal products based on this plant have been marketed via import for public use, Strict regulation on these products should be in place.

## References

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