Ashwagandha or Withania

Also known as Winter Cherry and Indian Ginseng in England.
Botanical Name: *Withania somnifera* (L.) Dunal

References:

- Ashwagandha is a Sanskrit word. Its root smells like horse and has been used in Ayurvedic medical system since ancient times. Modern medical research works conducted globally also supports its various important uses.
- In USA, this herb is also included in the American Herbal Pharmacopeia as “Ashwagandha Root – Withania somnifera: Analytical, Quality Control, and Therapeutic Monograph. Santa Cruz: American Herbal Pharmacopeia; April 2000.”

Below we present a very short summary of this herb along with only a few scientific references for interested persons:

Ashwagandha or Withania has been used in insomnia, senile debility and as a tonic for the elderly.

References:

- Thakur RS, Puri HS, Husain A. Major Medicinal Plants of India. Lucknow: Central Institute of Medicinal and Aromatic Plants; 1989. pp. 531–535.
- Atal CK, Schwarting AE. Econ Bot. 1961; 15(3):256–263.

Withania somnifera is a growth promoter with anti-anaemic activity in children.

Reference:

- Venkataraghavan S, Seshadri C, Sundaresan TP, et al. J Res Ayu Sid. 1980; 1:370–385.

It is a very good agent long being used for memory retrieval.

Reference:

- Bhattacharya SK, Kumar A, Ghosal S. Phytother Res. 1995; 9(2):110–113.

In the Middle East, Withania root is used as a sedative and hypnotic and is also taken for rheumatic pains.

Reference:

- Miller AG, Morris M. Plants of Dhofar. The Office of the Adviser for Conservation of the Environment, Diwan of Royal Court Sultanate of Oman; 1988. p. 274.

A methanol extract of Withania given orally reduced the ulcer index, volume of gastric secretion and acidity in experimentally induced ulceration. The antiulcer effect of Withania treatment was comparable to ranitidine.

Reference:

- Bhatnagar M, Sisodia SS, Bhatnagar R. Ann N Y Acad Sci. 2005; 1056:261–278.

One interesting property of Withania root is its activity on the central nervous system (CNS). Despite the fact that it is a tonic herb, it has demonstrated neuroprotective, sedative and antiepileptic effects, and is also a cognition enhancer (confirming traditional use).

Reference:

- Withania somnifera, Kerry Bones – Mills – P-P Phytotherapy 2013

In high doses, alkaloids from Withania exhibited prolonged hypotensive, bradycardic and respiratory stimulant actions and had a depressant effect on higher cerebral centres.

Reference:

- Malhotra CL, Das PK, Dhalla NS, et al. Indian J Med Res. 1961;49:448–460

Oral doses of Withania extract (100 to 500mg/kg) have also demonstrated anxiolytic effects in a rat model.

Reference:

- Gupta GL, Rana AC. Indian J Physiol Pharmacol. 2007;51(4):345–353.

Withania root powder (0.75 to 1.5g/day) added to the diet of hypercholesterolaemic rats significantly decreased total lipids, total cholesterol and triglycerides. In these animals, administration of Withania resulted in increased bile acid, cholesterol and neutral sterol excretion. Lipid peroxidation was also decreased. An increase in HMG-CoA reductase activity, along with increased cholesterol elimination, might be due to increased hepatic bile acid production. This would lead to a decline in body cholesterol levels.

Reference:

- Visavadiya NP, Narasimhacharya AV. Phytomedicine. 2007;14(2–3):136–142.

A cardioprotective effect was demonstrated for various oral doses of Withania extract (ranging from 25 to 300mg/kg) in the following rat models: ischaemia-reperfusion injury, isoprenaline-induced myonecrosis and doxorubicin-induced toxicity.

References:

- Mohanty I, Gupta SK, Talwar KK, et al. Mol Cell Biochem. 2004; 260(1–2):39–47.
- Mohanty I, Arya DS, Dinda A, et al. Basic Clin Pharmacol Toxicol. 2004; 94(4):184–190.
- Hamza A, Amin A, Daoud S. Cell Biol Toxicol. 2008;24(1):63–73.

Antioxidant effects may have contributed to the activity. Cardioprotective effects were also later observed for ischaemia-reperfusion injury after oral doses (50mg/kg of extract in rats).

Reference:

- Mohanty IR, Arya DS, Gupta SK. Clin Nutr. 2008;27(4):635–642.

Oral doses of Withania extract enhanced serum T4 (thyroxine) levels in female mice, and both T3 and T4 in male mice (1.4g/kg of aqueous extract).

Reference:

- Panda S, Kar A. J Pharm Pharmacol. 1998;50(9):1065–1068.

Withania extract (200 and 400mg/kg, oral) for 5 weeks improved hyperglycaemic parameters and countered the rise in insulin resistance in a rat model of diabetes (streptozotocin-induced).

Reference:

- Anwer T, Sharma M, Pillai KK, et al. Basic Clin Pharmacol Toxicol. 2008;102(6):498–503.

Withania (1g/day) was administered to trainee mountaineers over 29 days in an uncontrolled trial that included a 5200m altitude gain through trekking and 6 days' training at that height, including a climb to 6400m and subsequent descent. Psychological and physiological parameters were tested at various altitudes. Withania improved sleep patterns, responsiveness, alertness and state of awareness, together with physical capabilities.

Reference:

- Roy AS, Acharya SB, De AK, et al. International Seminar – Traditional Medicine. Calcutta: November 7–9, 1992. p. 161.

About 71% of the men receiving Withania reported an improvement in sexual performance.

Reference:

- Kuppurajan K, Rajagopalan SS, Sitaraman R, et al. J Res Ayu Sid. 1980;1:247–258.

Administration of Withania to 28 healthy elderly men and women (60 to 75 years of age) modestly improved muscle strength and muscle functional performance in an uncontrolled trial. The dosage was described as two 500mg capsules daily for 3 months, possibly as the dried root. (Sarcopenia is defined as muscle mass more than two standard deviations below the sex-specific young-normal mean.) Muscle strength in biceps, measured using the MRC scale, increased from 4.5 to 4.7 (statistical significance not stated). (The MRC scale, developed by the Medical Research Council in Britain, runs from 0 (no movement) to 5 (normal power).) The results for the Timed Up and Go test improved from 13.5 to 11.8 seconds. (This test measures the time taken to stand up from a standard armchair, complete a walk, turn around and sit down again.)

Reference:

- Mishra S, Ravi B. Neuromuscul Disord. 2006;16(suppl 1):S176–S177. Abstract M-P-16.12.

Male Fertility

Results from two uncontrolled clinical trials from the one research group in India suggest that Withania might exert beneficial effects in male fertility. However, these results need to be confirmed in suitably designed and controlled studies. One trial investigated the impact of Withania (5g/day of root powder in milk) for 3 months in 75 infertile men. While there was a 'control' group of 75 normal untreated men, their inclusion was to establish normal levels of the various parameters tested, rather than act as a control for any treatment effect from Withania. The Withania-treated group consisted of three subgroups: 25 men with relatively normal semen profile (although much poorer than the control group), 25 with low sperm concentration and 25 men with low sperm motility. The herbal treatment resulted in significant increases from baseline for sperm motility and concentration in all three subgroups ($p<0.01$).

Reference:

- Ahmad MK, Mahdi AA, Shukla KK, et al. Fertil Steril. 2009

In the other trial, 60 apparently infertile men with normal sperm parameters received the above dose of Withania for 3 months. The men were again classified into three subgroups: 20 heavy smokers, 20 under psychological stress and 20 with infertility of unknown aetiology. Again the various parameters measured were assessed against an untreated healthy 957 Withania control group. Compared with baseline, significant improvements were noted for sperm liquefaction and concentration in all three subgroups.

Reference:

- Mahdi AA, Shukla KK, Ahmad MK, et al. Evid Based Complement Alternat Med. 2011. Article ID 576962, 9 pages.

Anxiety

In a double blind, placebo-controlled trial, 39 patients diagnosed with generalised anxiety disorder according to the ICD-10 were randomised to receive either Withania extract (1000mg/day, probably from about 6 to 8g of root) or placebo for 6 weeks.

The first follow-up was at 2 weeks, at which time the dose was lowered or increased according to the clinical response and adverse effects reported. Subsequent dose changes to individual requirements occurred at weekly intervals if needed, within the range of 500 to 2500mg/ day of extract. The average dose by the end of the trial was 1,250mg. The primary treatment outcome was change in the HAM-A score. Patients were evaluated at week 2 (six dropouts) and week 6 (19 dropouts). The mean HAM-A score dropped in both groups, but more in the herbal group, which trended towards a significant benefit compared with placebo (at week 2 $p=0.098$, at week 6 $p=0.062$) despite the low patient numbers. There was no difference in the adverse effects reported by both groups, except for perhaps greater drowsiness for Withania.

Reference:

- Andrade C, Aswath A, Chaturvedi SK, et al. Indian J Psychiatry. 2000;42(3):295–301.

A large number of employees in Canada with moderate or severe anxiety of longer than 6 weeks were randomised to receive either naturopathic care (n=41) or psychotherapy (n=40) for 12 weeks. Naturopathic care consisted of dietary counselling, relaxation techniques, a standard multivitamin and Withania extract (600mg/day standardised to 1.5% withanolides). The psychotherapy group received psychotherapy, a matched relaxation technique and a placebo. Seventy-five participants were followed for 8 or more weeks. By the end of the trial, final Beck Anxiety Inventory scores had decreased by 56.5% in the Withania/naturopathy group, compared with 30.5% in the placebo/psychotherapy group. This difference in treatment effects was significant (p=0.003). Significant differences favouring Withania/naturopathy treatment were also observed for mental health, concentration, fatigue, social functioning and overall quality of life. No serious adverse reactions were observed in either group.

Reference:

- Cooley K, Szczurko O, Perri D, et al. PLoS One. 2009; 4(8):e6628

Withania significantly decreased (p<0.01) serum total cholesterol (by 10%), triglycerides (by 15%) and LDL- and VLDL-cholesterol compared with baseline values. Lipid profiles remained largely unchanged in the untreated control group (n=6). The mean calorie and fat intakes of the treatment groups were higher than those of the control groups.

Reference:

- Andallu B, Radhika B. Indian J Exp Biol. 2000; 38:607–609.

Healthy men (aged 50 to 59 years) prescribed therapeutic doses of Withania (3g/day) for 1 year in a randomised, double blind, placebo-controlled clinical trial reported an increase in their sexual performance.

Reference:

- Kuppurajan K, Rajagopalan SS, Sitaraman R, et al. J Res Ayu Sid. 1980; 1:247–258.

Toxicity Studies

No toxic effects were observed in rats and mice orally administered Withania root aqueous extract (50 to 1000mg/kg/day) for up to 4 weeks or in rats orally administered an undefined Withania root extract at 100mg/kg/day for 180 days.

References:

- Rege NN, Thatte UM, Dahanukar SA. Phytother Res. 1999; 13(4):275–291.
- Dhuley JN. J Ethnopharmacol. 2000; 70(1):57–63.

Oral administration of Withania whole plant extract (200mg/kg/day) for 7 months had no significant effect on mortality in mice.

Reference:

- Singh N, Singh SP, Nath R, et al. Int J Crude Drug Res. 1986; 24(2):90–100.

Also no toxic effects were observed when the decoction was orally administered at a dose of 100mg/kg/day for 8 months.

Reference:

- Sharma S, Dahanukar S, Karandikar SM. Indian Drugs. 1986; 23(3):133–139.

Contraindications:

None known.

Reference:

- Withania somnifera, Kerry Bones – Mills – P-P Phytotherapy 2013

Special Warnings and Precautions:

None required.

Reference:

- Withania somnifera, Kerry Bones – Mills – P-P Phytotherapy 2013

Withania extract may enhance the effect of benzodiazepines. Oral administration of Withania extract (100mg/kg) to rats reduced the effective dose of benzodiazepines, while providing a protective effect in experimentally induced epilepsy.

Reference:

- Kulkarni SK, George B, Mathur R. Phytother Res. 1998; 12(6):451–453

Effects on ability to drive and use machines:

No negative influence is expected at the recommended dosage.

Reference:

- Withania somnifera, Kerry Bones – Mills – P-P Phytotherapy 2013

Side-Effects:

High doses have been reported to cause gastrointestinal upset, diarrhoea and vomiting, which may be due to the steroidal saponin content.

References:

- Chandha E, ed. The Wealth of India: A Dictionary of Indian Raw Materials and Industrial Products, vol. 10. Council of Scientific and Industrial Research, New Delhi, 1976.
- Cited in American Herbal Pharmacopoeia. Ashwagandha Root – Withania somnifera: Analytical, Quality Control, and Therapeutic Monograph. Santa Cruz: American Herbal Pharmacopeia; April 2000.

Duration of Use:

No problems known with long-term use.

Reference:

- Withania somnifera, Kerry Bones – Mills – P-P Phytotherapy 2013

Safety:

Till now, Withania does not have GRAS status. However, it is freely available as a 'dietary supplement' in the USA under DSHEA legislation (1994 Dietary Supplement Health and Education Act).

Withania is yet not included in Part 4 of Schedule 4 of the Therapeutic Goods Act Regulations of Australia and is freely available for sale.

Reference:

- Withania somnifera, Kerry Bones – Mills – P-P Phytotherapy

Many thanks for your attention.

FURTHER INFORMATION IS AVAILABLE FROM:
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Opsonin Building, 30 New Eskaton, Dhaka 1000,
Visit our website: www.opsonin-pharma.com