

ANTI-INFLAMMATORY & NEEM

Recent Research

[Curr Med Chem Anticancer Agents](#). 2005 Mar;5(2):149-6.

Medicinal properties of neem leaves: a review.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15777222&query hl=30&itool=pubmed docsum

Azadirachta indica, commonly known as neem, has attracted worldwide prominence in recent years, owing to its wide range of medicinal properties. Neem has been extensively used in Ayurveda, Unani and Homoeopathic medicine and has become a cynosure of modern medicine. Neem elaborates a vast array of biologically active compounds that are chemically diverse and structurally complex. More than 140 compounds have been isolated from different parts of neem. All parts of the neem tree- leaves, flowers, seeds, fruits, roots and bark have been used traditionally for the treatment of inflammation, infections, fever, skin diseases and dental disorders. The medicinal utilities have been described especially for neem leaf. Neem leaf and its constituents have been demonstrated to exhibit immunomodulatory, anti-inflammatory, antihyperglycaemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic and anticarcinogenic properties. This review summarises the wide range of pharmacological activities of neem leaf.

Publication Types: [Review](#)

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[Life Sci](#). 2005 Feb 4;76(12):1325-38. Epub 2005 Jan 18.

Neuroprotective effect of Azadirachta indica on cerebral post-ischemic reperfusion and hypoperfusion in rats.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15670613&query hl=30&itool=pubmed docsum

We assessed the effect of Azadirachta indica (A. indica), a plant that has been reported to possess antioxidant, anti-inflammatory and anxiolytic properties, on cerebral reperfusion injury and long term cerebral hypoperfusion. When blood flow to brain region that has undergone critical period of ischemia is re-established, additional injury is to be expected from the reperfusion. In the present study, bilateral common carotid artery (BCCA) occlusion for 30 min followed by 45 min reperfusion resulted in increase in lipid peroxidation, superoxide dismutase (SOD) activity and fall in total tissue sulfhydryl (T-SH) groups. A. indica pretreatment (500

mg/kg/day x 7 days) attenuated the reperfusion induced enhanced lipid peroxidation, SOD activity and prevented fall in T-SH groups. Moreover, *A.indica* per se increased brain ascorbic acid level, which was unchanged during reperfusion insult. Long-term cerebral hypoperfusion induced by permanent BCCA occlusion has been reported to cause behavioral and histopathological abnormalities. In the present study, as tested by open field paradigm and Morris' water maze, a propensity towards anxiety and disturbances of learning/memory were observed in animals subjected to hypoperfusion for 2 weeks. *A. indica* (500 mg/kg/day x 15 days) significantly reduced these hypoperfusion induced functional disturbances. Reactive changes in brain histology like gliosis, perivascular lymphocytic infiltration, recruitment of macrophages and cellular edema following long term hypoperfusion were also attenuated effectively by *A. indica*. We conclude that our study provides an experimental evidence for possible neuroprotective potentiality of *A. indica*.

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[J Ethnopharmacol.](#) 2004 Sep;94(1):25-41.

Safety evaluation of neem (*Azadirachta indica*) derived pesticides.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15261960&query_hl=30&itool=pubmed_docsum

The neem tree, *Azadirachta indica*, provides many useful compounds that are used as pesticides and could be applied to protect stored seeds against insects. However in addition to possible beneficial health effects, such as blood sugar lowering properties, anti-parasitic, anti-inflammatory, anti-ulcer and hepatoprotective effects, also toxic effects are described. In this study we present a review of the toxicological data from human and animal studies with oral administration of different neem-based preparations. The non-aqueous extracts appear to be the most toxic neem-based products, with an estimated safe dose (ESD) of 0.002 and 12.5 microg/kg bw/day. Less toxic are the unprocessed materials seed oil and the aqueous extracts (ESD 0.26 and 0.3 mg/kg bw/day, 2 microl/kg bw/day respectively). Most of the pure compounds show a relatively low toxicity (ESD azadirachtin 15 mg/kg bw/day). For all preparations, reversible effect on reproduction of both male and female mammals seem to be the most important toxic effects upon sub-acute or chronic exposure. From the available data, safety assessments for the various neem-derived preparations were made and the outcomes are compared to the ingestion of residues on food treated with neem preparations as insecticides. This leads to the conclusion that, if applied with care, use of neem derived pesticides as an insecticide should not be discouraged.

Publication Types: [Review](#)

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[Phytother Res.](#) 2004 May;18(5):419-24.

Nimbidin suppresses functions of macrophages and neutrophils: relevance to its antiinflammatory mechanisms.

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Nimbidin is a mixture of tetranortriterpenes and is the major active principle of the seed oil of *Azadirachta indica* A. Juss (Meliaceae) possessing potent antiinflammatory and antiarthritic activities. The present study revealed that nimbidin significantly inhibited some of the functions of macrophages and neutrophils relevant to the inflammatory response following both in vivo and in vitro exposure. Oral administration of 5-25 mg/kg nimbidin to rats for 3 consecutive days significantly inhibited the migration of macrophages to their peritoneal cavities in response to inflammatory stimuli and also inhibited phagocytosis and phorbol-12-myristate-13-acetate (PMA) stimulated respiratory burst in these cells. In vitro exposure of rat peritoneal macrophages to nimbidin also inhibited phagocytosis and PMA stimulated respiratory burst in these cells. Nimbidin also inhibited nitric oxide (NO) and prostaglandin E₂ (PGE₂) production in lipopolysaccharide (LPS) stimulated macrophages following in vitro exposure, whereas interleukin 1 (IL-1) was only weakly inhibited. Probing the mechanism of NO inhibition revealed that nimbidin ameliorated the induction of inducible NO synthase (iNOS) without any inhibition in its catalytic activity. In addition, nimbidin also attenuated degranulation in neutrophils assessed in terms of release of beta-glucuronidase, myeloperoxidase and lysozyme. The results suggest that nimbidin suppresses the functions of macrophages and neutrophils relevant to inflammation. Thus nimbidin can be valuable in treating inflammation/inflammatory diseases. Copyright 2004 John Wiley & Sons, Ltd. PMID: 15174005 [PubMed - indexed for MEDLINE]

[Phytomedicine](#). 2003;10(5):391-6.

Effect of *Azadirachta indica* on paracetamol-induced hepatic damage in albino rats.

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Azadirachta indica, a plant used widely in Ayurveda, has been reported to have anti-inflammatory, immunomodulatory and adaptogenic properties. The present study evaluates its hepatoprotective role. Fresh juice of tender leaves of *Azadirachta indica* (200 mg/kg body wt. p.o.) inhibited paracetamol (2 g/kg body wt. p.o.)-induced lipid peroxidation and prevented depletion of sulfhydryl groups in liver cells. There was an increase in serum marker enzymes of hepatic damage (aspartate transaminase, alanine transaminase and alkaline phosphatase) after paracetamol administration. *Azadirachta indica* pretreatment stabilized the serum levels of these enzymes. Histopathological observations of liver tissues corroborated these findings. PMID: 12834004 [PubMed - indexed for MEDLINE]

[J Androl](#). 1993 Jul-Aug;14(4):275-81.

Antifertility effects of neem (*Azadirachta indica*) oil in male rats by single intra-vas administration: an alternate approach to vasectomy.

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An alternate approach to vasectomy for long-term male contraception following a single intra-vas application of a traditional plant (*Azadirachta indica*) product having immunomodulatory properties is described. Male Wistar rats of proven fertility were given a single dose (50 microliters) of neem oil in the lumen of the vas deferens on each side; control animals received the same volume of peanut oil. Animals were put on continuous mating 4 weeks after the treatment, with females of proven fertility. While the control animals impregnated the female partners, all males treated with neem oil remained infertile throughout the 8 months of observation period. Epididymal and vas histology were normal without any inflammatory changes or obstruction. The intra-vas administration of neem oil resulted in a block of spermatogenesis without affecting testosterone production; the seminiferous tubules, although reduced in diameter, appeared normal and contained mostly early spermatogenic cells. No anti-sperm antibody could be detected in the serum. Unilateral administration of neem oil in the vas resulted in a significant reduction of testicular size and spermatogenic block only on the side of application; the draining lymph node cells of the treated side also showed enhanced proliferative response to in vitro mitogen challenge. These results indicate that the testicular effects following intra-vas application of neem oil may possibly be mediated by a local immune mechanism.

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