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Neem Flower, Neem full tree, Neem seed and leaf (Image references in reference section)



Neem “The Village Pharmacy”

(Karta Purkh Singh Khalsa & Michael Tierra, 2008)

Part: bark, leaves, seed, seed kernel, fruit, flowers

Taste: astringent, **bitter**, pungent

Latin name: *Azadiracta indica*

Western medicine/research: constituents (not an exhaustive list); Nimbidin (extracted from the oil of seed kernels); tetranortriterpenes, including nimbin, nimbinin, nimbidinin, nimbolide and nimbidic acid, gedunin, azadirachtin, mahmoodin, gallic acid*, gallo catechin*, epicatechin* (*extracted from bark) (Biswas, Kausik, et al. 2002)

Actions: Table 1. Some bioactive compounds from neem (Biswas, Kausik, et al. 2002)

Neem Compound	Biological activity
Nimbindin (seed oil)	Anti-inflammatory, Antiarthritic, Antipyretic, Hypoglycaemic, Anti-gastric ulcer, Spermicidal, Antifungal, Antibacterial, Diuretic,
Sodium nimbidate	Anti-inflammatory
Nimbin (seed oil)	Spermicidal
Nimbolide (seed oil)	Antibacterial, antimalarial
Gedunin (seed oil)	Antifungal, anti-malarial
Azadirachtin (seed)	Anti-marlarial
Mahmoodin (seed oil)	Antibacterial
Gallic acid, epicatechin and catechin (bark)	Anti-inflammatory, immunomodulatory
Margolone, margolonone, isomargolonone (bark)	Antibacterial
Cyclic trisulphide, cyclic tetrasulphide (leaf)	Antifungal
Polysaccharides	Anti-inflammatory
Polysaccharides Gla, G1b (bark)	Anti-tumor
NB-II peptidoglycan (bark)	Immunomodulatory

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***Research was not exhaustive, there are many studies on Neem and its medicinal properties/varying formulations/applications**

Neem seed research:

“neem seed extract when diluted 1:10 with shampoo ... It was shown that a broad range of pests and parasites, such as house dust mites, poultry mites, harvest mites, Ixodes and Rhipicephalus ticks, cat fleas (adults, larvae), bed bugs (all stages), head lice and mallophaga, cockroaches (genera Blatta, Blattella, Gomphadorhina), raptor bugs (Triatoma), and even food-attacking beetle (Tenebrio molitor) might be controlled with this extract” (Schmahl, Günter, et al. 2010)

“neem-based shampoo blocked the aeropyles of the eggs, thus preventing the embryos of both races of lice from accessing oxygen and from releasing carbon dioxide. Thus, this product offers a complete cure from head lice upon a single treatment” (Mehlhorn, Heinz, et al. 2011)

“Nimbidin and nimbolide from seed oil show antifungal, antimalarial and antibacterial activity including inhibition of Mycobacterium tuberculosis” (Lokanatha, O., S. Mamatha, and Damodar Reddy, 2013)

“The mechanism of action of neem oil appears to be non-hormonal, probably mediated through its spermicidal effect and may have less side effects than steroidal contraceptives” (Maithani, Alok, et al. 2011)

*For use on psoriasis- “It can be concluded that systemic and topical administration required for better management of Psoriasis” (Morya, G. C. K., V. Vinita, and R. Bahadur. 2017)

*For use on psoriasis- “inhibition of prostaglandin synthetase by nimbidin, a secondary metabolite present in A. indica essential oil” (Zuccotti, E., et al. 2018)

***Oil from seed kernels** – “From this crude principle some tetranortriterpenes, including nimbin, nimbinin, nimbidinin, nimbolide and nimbidic acid have been isolated. These have been shown to exert antimalarial activity by inhibiting the growth of Plasmodium falciparum. Nimbolide also shows antibacterial activity against S. aureus and S. coagulase.” (Maithani, Alok, et al. 2011)

***Oil from seed kernels**- “In vivo studies showed that intravaginal application of neem oil prior to coitus can prevent pregnancy. Antifertility effect of neem oil has also been studied and suggested to be a novel method of contraception” (Maithani, Alok, et al. 2011)

Neem leaf research:

“In this study, we have shown that the aqueous extracts of neem leaf exhibited highest antimicrobial activity compared with the bark and seed” (Lokanatha, O., S. Mamatha, and Damodar Reddy, 2013)

“The phytochemical and biological experiments performed during the current study confirm the antioxidant and antibacterial properties of neem leaves” (Pandey, Garima, K. K. Verma, and Munna Singh, 2014)

“The aqueous extract of leaf also possesses potent immune-stimulant activity as evidenced by both humoral and cell-mediated responses” (Maithani, Alok, et al. 2011)

“Aqueous extract of neem leaves significantly decreases blood sugar level and prevents adrenaline as well as glucose-induced hyperglycaemia” (Maithani, Alok, et al. 2011)

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“In HIV/AIDS patients, a 12-week oral administration of acetone water neem leaf extract (IRAB) had a significant influence in vivo on CD4 cells (which HIV reduces) without any adverse effects in the patients” (Hashmat, Imam, Hussain Azad, and Ajij Ahmed. 2012)

***Flower/leaf** – “Hot water extract of the flower and leaf is taken orally as an anti-hysterical remedy, and used externally to treat wound.” (Hashmat, Imam, Hussain Azad, and Ajij Ahmed. 2012)

***Flower**- “dried flower is taken orally for diabetes” (Hashmat, Imam, Hussain Azad, and Ajij Ahmed. 2012)

Neem bark research:

“Margolone, margolonone and isomargolonone are tri-cyclic diterpenoids isolated from stem bark are shown to exhibit antibacterial activity” (Lokanatha, O., S. Mamatha, and Damodar Reddy, 2013)

“tannins from the bark contain gallic acid, (+) gallocatechin, (–) epicatechin, (+) catechin and epigallocatechin, of which gallic acid (1), (–) epicatechin (2) and catechin (3) are primarily responsible for inhibiting the generation of chemiluminescence by activated human polymorphonuclear neutrophil (PMN)¹², indicating that these compounds inhibit oxidative burst of PMN during inflammation.” (Maithani, Alok, et al. 2011)

“Hot water extract of the bark is taken orally by the adult female as a tonic and emmenagogue” (Hashmat, Imam, Hussain Azad, and Ajij Ahmed. 2012)

Neem fruit research:

“Some active ingredient (Phytosterols) were isolated from the lipophilic fraction of neem fruit, exhibit antiulcer activity in stress induced gastric lesion.⁵²In Ayurveda it is used in piles, intestinal worm, urinary disorder, epistaxis, phlegm, diabetes, wound and leprosy.” (Maithani, Alok, et al. 2011)

“Hot water extract of dried fruit is used for piles and externally for skin disease and ulcers” (Hashmat, Imam, Hussain Azad, and Ajij Ahmed. 2012)

Neem general uses: (not an exhaustive list) Acne/pimples, dandruff, eczema, psoriasis, athlete's foot, boils/carbuncles, canker sores, cellulitis, corns/calluses, diaper rash, herpes/coldsores, impetigo, ringworm, rosacea, scabies (“NEEM, Nature's Healing Gift to Humanity”, Klaus Ferlow 2015)

Cautions: oil is not to be orally ingested, “can act as a mild contraceptive” (“NEEM, Nature's Healing Gift to Humanity”, Klaus Ferlow 2015)

Preparation/dosage: (not an exhaustive list) neem seed oil, neem seed kernel oil, water-extracted leaf formulations, creams, lotions, soaps, shampoos, pesticide formulations, ethanol-extracted leaf/bark formulations (***dosage** dependant on formulation applied and intended use)

“Neem personal care products derived from seed, oil and leaf include; Skin care - including eczema cream, antiseptic cream, and nail care; hair care - shampoo, and hair oils; oral hygiene - toothpaste and neem twigs; therapeutic - loose Neem leaves – tea, vegetarian capsules, powders; household products - soaps, insect repellent (spray and lotion), and candles.” (Hashmat, Imam, Hussain Azad, and Ajij Ahmed. 2012)

Ayurvedic Medicine:

Ayurvedic name: Nimba, “the village pharmacy”

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Energy: Cooling

Tastes: bitter, astringent, pungent

Effects on Dosha: Decrease Pitta and Kapha (bitter taste), increases Vata

Traditional use: purification of ama (toxins) especially of the skin, parasites, irritation and skin ailments, vomiting, diabetes, jaundice, arthritis ("The Way of Ayurvedic Herbs", Karta Purkh Singh Khalsa & Michael Tierra, 2008)

Cautions: with tissue deficiency and cold temperatures, but is considered safe with mild adverse effects

Preparations/dosage: Tea, application of crushed leaf on to skin irritations, eye solution, twigs used for toothbrushes ("The Way of Ayurvedic Herbs", Karta Purkh Singh Khalsa & Michael Tierra, 2008)

Refs:

Images:

Neem flowers: <https://www.pinterest.ca/pin/560416747371883268/>

Neem seed and leaves: <https://www.britannica.com/plant/neem-tree> ©2020 Encyclopædia Britannica, Inc.

Neem full tree: <https://www.asianjournal.ca/neem-the-tree-of-the-21st-century/> © 2018 Asian Journal by SW Media Group

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- 2) Schmahl, Günter, et al. "The efficacy of neem seed extracts (Tre-san®, MiteStop®) on a broad spectrum of pests and parasites." Parasitology research 107.2 (2010): 261-269.
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