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Review on Recent Marketed Products Of Neem

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Abstact:

Since many centuries, Ayurveda regarded neem (*Azadirachta indica* Family: Meliaceae) as a cure for many ailments, predominantly due to its superb antimicrobial activity. It has been a practice since time immemorial to use tender twigs of neem as dentifrice. The scope of the present work is limited to testing the antibacterial activity of neem extract and neem powder in a tooth paste form.

there are various properties of neem like anticancerus ,antiinflammetory,antioxidant,antibacterial ,antiviral etc .Neem contain various wound healing properties. Various marketed formulation available in the market like neem acne face wash ,tooth paste , hair oil, neem soap . Various phytochemicals are present in the neem i.e Alkaloids, flavonoids ,crud glycosides ,cardiac glycosides, tannic acid ,saponins .

Keywords: neem , herbal ,marketed ,properties

Introduction:

Neem (*Azadirachta indica*) which is a word derived from an Indian language that means perfect, completely imperishable is a commonly grown tree that is found mostly in tropical countries such as India, Africa and northern America. It is broad-leaved evergreen that grows up to 30m tall and belongs to mahogany family, called Meliaceae.[5]

Herbal soaps are 100 percent organic and offer plant extracts which contain important oils. When extracted with steam distillation or cool compression, they add to skincare benefits still further. They are suited for aromatherapy as well – therefore, they soothe the body and the mind.[1]

Herbal Cosmetics, here in after referred as Products, are formulated, using various permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to provide defined cosmetic benefits only, shall be called as “Herbal Cosmetics” [2] The history of the herbal cosmetics industry includes very dark chapters in European and Western countries from about six centuries back. Mixtures and pastes were then used to whiten the face, a practice which remained popular till over four hundred years later.

The early mixtures that were used in Europe for this purpose were so potent that they often led to paralysis, strokes or death. In that era, the history of herbal cosmetics in the 1940s shows how the fashion or trend with respect to lipstick colors was changed annually, getting darker and closer to red every passing year. It was around this time that eyebrow shaping also became popular. Some of the pure herbs are extracted from the terrains of great Himalayas where numerous herbs are yet to be identified. With their unending health benefits, it is expected that Herbal extracts will soon revive the era of healthy mind and body.[3]

Antimicrobial activity of any substance is defined as its ability to either kill bacteria or inhibit the growth of bacteria. Antimicrobial activity is significant with respect to the human body in preventing diseases and skin infections. Detergents and soaps are the disinfectants required in daily practices for hygienic point. Soaps are cleaning agents, which may be liquid, solid, semisolid or powders.

Soaps are used to remove dirt, including dust, microorganisms, stains and bad smells in order to maintain health, beauty and remove bad odour from the body or inanimate objects, including cloth :[5]

CLASSIFICATION OF NEEM:

TABLE 1:

Kingdom	Plantae
Phylum	Vascular plant
Class	Magnoliopsida
Order	Rutales
Suborder	Rutinae
Tribe	Melieae
Family	Meliaceae
Subfamily	Melioideae
Genus	<i>Azadirachta</i>
Species	<i>Indica</i>



FIG 1: NEEM

It was one of the most versatile medicinal plants having a wide spectrum of biological activities and the following are the commonly used forms of the plant in more than 50 countries. The tree parts are used against various human ailments as traditional medicine for household remedy. This tree was usually used as natural pesticide, planting and afforestation as shade trees and to protect against erosion, and definitely as medicinal plants. [6] The plant is widely cultivated in Nigeria as a decorative and medicinal plant. However, it is quite native to Asia, but has now naturalized in West Africa. It is used extensively in Nigeria for the traditional treatment of malaria and other associated conditions in form of consumption with unspecified quantities without due regards to its toxicological and other adverse effects. This way of consumption is termed as decoction.

CHEMICAL CONSTITUTION:

Neem (*Azadirachta indica*) elaborates a vast array of biologically active compounds which are structurally complex and chemically diverse. Every part of this plant is used as herb. During the past two decades, the chemical constituents and biological activities of *Azadirachta indica* were intensively investigated in both developing and developed countries. Several published studies revealed a lot of biological compounds (*Azadirachtin M* and *Azadirachtin N*) and effects of these compounds on insects, and other inhibitory activities such as antitypanosomal and antiprotozoal. Siddiqui et al., (2009) extracted different constituents from the flowers of *Azadirachta indica* and analyzed their insecticidal activity, they found around 38 compounds in the flowers with insecticidal activity (such as: nHentriacontane, n-Nonacosane, nPentacosane, 2-Methoxy-5,40-dimethylbenzenebutanal, Methyl octadecanoate acid, etc). The group of tetranortriterpenoids, especially *azadirachtin* analogues is responsible for most of the active principles as it has many antiinfective and antimicrobial properties

Table no :2

Sr. No.	Phytochemical	Result	%age in native Neem
1.	Alkaloids	+	4.1%
2.	Flavonoids	+	2.5%
3.	Crude glycosides	+	4.5%
4.	Cardiac glycosides	+	5.0%
5.	Steroid & triterpenoids	+	3.0%
6.	Tannic acid	+	0.643%
7.	Saponins	+	4.96%
8.	Anthraquinone(free)	—	
9.	Anthraquinone(bound)	—	

❖ MORPHOLOGY OF NEEM :

Neem is a large evergreen tree that may grow upto 20m in height. The leaves are alternate and the leaflets contain 8-19 leaves that may appear in March-April. The leaves are bitter in taste.

Common name: Neem, Margosa

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Sapindales

Family: Meliaceae

Genus: Azadirachta

Species: indica.[8]

Advantages of various Neem parts:

Neem oil: useful for pest control, cosmetics, medicines, etc.

Neem seed cake: Natural fertilizer and insecticide.

Neem leaves: useful for chickenpox, increase immunity of the body, reduce fever caused by malaria, treating various foot fungi, useful against termites, used in curing neuromuscular pains.

Neem bark and roots: control fleas and ticks on pets, fights against skin infections such as acne, psoriasis, scabies, eczema, etc, treats diabetes, AIDS, cancer, heart disease, herpes, allergies, ulcers, hepatitis and several other diseases.[9]

Various Properties Of Neem :

❖ Antioxidant Activity:

Free radical or receptive oxygen species are one of the fundamental offenders in the genesis of different illnesses. Notwithstanding, neutralization of free radical activity is one of the imperative strides in the maladies counteractive action. Antioxidants stabilize/deactivate free radicals, regularly before they assault focuses in biological cells and furthermore assume job in the activation of anti oxidative protein that assumes job in the control of harm brought about by free radicals/receptive oxygen species. Therapeutic plants have been accounted for to have antioxidant activity . Plants natural products, seeds, oil, leaves, bark, and roots demonstrate an essential job in illnesses aversion because of the rich source of antioxidant. Leaf and bark concentrates of *A. indica* have been considered for their antioxidant activity and aftereffects of the examination plainly shown that leaf and bark extracts/fractions of neem developed in the lower regions have significant antioxidant properties. Another critical examination was performed dependent on leaves, fruits, flowers, and stem bark extracts from the Siamese neem tree to evaluate the antioxidant activity and results recommend that extricates from leaf, blossom, and stem bark have strong antioxidant potential.

❖ **Anti cancerous Activity:**

Malignant growth is multi-factorial malady and significant medical issue around the world. The modification of molecular/genetic pathways assumes job in the improvement and movement of malignant growth. The treatment module dependent on allopathic is compelling on one side yet in addition indicates adverse effect on the typical cell. Prior investigations detailed that plants and their constituents show inhibitory consequences for the development of malignant cells via modulation of cell expansion, apoptosis, tumour suppressor gene and different other molecular pathways. Neem contains flavanoids and different other ingredients that play an essential job in restraint of malignant growth advancement. Extensive number of epidemiological examinations suggests that high flavonoid admission might be related with a diminished danger of malignancy.

❖ **Anti-Inflammatory Effect of Neem:**

Plants or their isolated derivatives are in the practice to treat/act as anti-inflammatory agents. An examination result has affirmed that concentrate of *A. indica* leaves at a dose of 200mg/kg, p. o., demonstrated huge anti-inflammatory activity in cotton pellet granuloma test in rodents. Other examination results uncovered that neem leaf extricates demonstrated significant anti-inflammatory impact yet it is less effective than that of dexamethasone and examine results propose that nimbidin stifles the elements of macrophages and neutrophils pertinent to inflammation. Prior finding demonstrated immune modulator and anti-inflammatory impact of bark and leave concentrates and antipyretic and anti-inflammatory exercises of oil seeds. Experimentation was made to assess the pain relieving action of neem seed oil on albino rats and after effects of the examination demonstrated that neem seed oil indicated huge pain relieving impact in the portion of 1 and 2 mL/kg and oil has dose-dependent pain relieving action. Another examination was made to explore the anti-inflammatory impact of neem seed oil (NSO) on albino rats utilizing carrageen an-incited rear paw edema and results uncovered that NSO indicated expanded hindrance of paw edema with the dynamic increment in dose from 0.25mL to 2 mL/kg body weight. At the portion of 2 mL/kg body weight, NSO demonstrated most extreme (53.14%) hindrance of edema at fourth hour of carrageen an injection.

❖ **Hepatoprotective Effect:**

Therapeutic plants and their ingredients play a significant activity as hepatoprotective with no antagonistic ensnarement's. An examination was performed to inquire about the hepatoprotective employment of azadirachtin-An in carbon tetrachloride (CCl₄) impelled hepatotoxicity in rodents and histology and ultrastructure results certified that pretreatment with azadirachtin-A dose dependently diminished hepatocellular corruption. Other than after-effects of the examination exhibit that pretreatment with azadirachtin-An at the higher dose levels bearably restores the rat liver to normal.

❖ **Wound Healing Property :**

Different plants/their constituents accept a basic occupation in the damage recovering effect. An examination was made to evaluate the damage patching activity of the concentrates of leaves of *A. indica* and *T. cordifolia* using extraction and cut injury models in Sprague Dawley rodents and results revealed that concentrate of the two plants basically propelled the damage mending activity in both extraction and entry point damage models. In addition, in section point wound, rigidity of the recuperating tissue of the two plants treated group was seen to be significantly higher when appeared differently in relation the control groups.

❖ Antibacterial Activity :

An examination was performed to survey antimicrobial sufficiency of home grown choices as endodontic irrigants and differentiated and the standard irrigant sodium hypochlorite and result confirmed that leaf concentrates and grape seed extricates demonstrated zones of restriction prescribing that they had antimicrobial properties. Moreover, leaf extract showed fundamentally more remarkable zones of inhibition than 3% sodium hypochlorite. The antibacterial development of guava and neem isolates against 21 strains of food borne pathogens was evaluated and delayed consequence of the examination recommended that guava and neem extracts have compounds containing antibacterial properties that can possibly be significant to control food borne pathogens and deterioration life forms .

❖ Antiviral Activity :

Results exhibited that neem bark (NBE) remove basically blocked HSV-1 entry into cells at obsessions stretching out from 50 to 100 g/mL. Furthermore, blocking development of NBE was seen when the concentrate was preincubated with the disease anyway not with the objective cells proposing a quick enemy of HSV1 property of the neem bark . Leaves concentrate of neem (*Azadirachta indica* A. Juss.) (NCL-11) has shown virucidal development against coxsackievirus contamination B-4 as proposed by methods for disease inactivation and yield decline look at other than interfering at an early event of its replication cycle.

❖ Dentistry :

An investigation was made to survey the adequacy of neem dependent on mouth flush with respect to its anti gingivitis impact and concentrate affirmed that *A. indica* mouth flush is similarly viable in diminishing periodontal records as chlorhexidine . Another investigation was completed to assess the antimicrobial properties of natural concentrates of neem against three bacterial strains causing dental caries and results demonstrated that oil ether and chloroform remove indicated solid antimicrobial action against *S. mutans*. Chloroform remove demonstrated solid action against *Streptococcus salivarius* and third strain *Fusobacterium nucleatum* was highly sensitive to both ethanol and water extricate . Prior finding affirmed that dried chewing sticks of neem indicated most extreme antibacterial action against *S. mutans* walhen contrasted with *S. salivarius*, *S. mitis*, and *S. sanguis*. Early research recommends that applying a gel containing neem leaf concentrate to the teeth and gums twice day by day for about a month and a half may lessen the measure of plaque on the teeth. It likewise may diminish the quantity of microorganisms in the mouth that can cause plaque. It's indistinct if utilizing a mouth wash containing neem diminishes plaque. Some exploration demonstrates that utilizing a neem mouth flush is helpful, however other research demonstrates no ben.

❖ Antifungal Activity :

Investigation was made to assess the adequacy of different concentrates of neem leaf on seed borne parasites *Aspergillus* and *Rhizopus* and results affirmed that development of both the contagious species was fundamentally repressed and controlled with both alcoholic and water extract. Moreover, alcoholic concentrate of neem leaf was best.[10]

❖ Antifertility Activity :

Administration of neem leaf powder for 24 days resultrd in decrease in a weight of seminal vesicles & ventral prostate, reduction in epithelial height, nuclear diameter & the secretary material in the lumen. The ultrastructural changes induced by neem leaves in the testis of albino rats include vacuolization of Sertoli cells, diminished cytoplasmic inclusions in Leydig cells, as well as defects in the mitochondrial sheaths in late spermatids. Thus, neem leaves may affect

spermatogenesis through antispermatogenic & antiandrogenic properties. Aqueous extracts of old & tender neem leaves were shown to completely immobilize & kill, human spermatozoa within 20 seconds.[11]

❖ **Antinephrotoxicity Effect :**

A trial was made to explore the impacts of methanolic leaves extract of *Azadirachta indica* (MLEN) on cisplatin-(CP-) actuated nephrotoxicity and oxidative stress in rodents and results affirmed that extricate adequately saves the kidney from CP-interceded oxidative damage. Moreover, PCR results for caspase-3 and caspase-9 and Bax qualities indicated down regulation in MLEN treated groups.

❖ **Antimalarial Activity :**

The antimalarial activities of the tablet suspension of the bark and leaf of *Azadirachta indica* were evaluated on *Plasmodium yoelli nigeriensis* infected mice. The tablet suspensions exhibited high prophylactic, mode-rate suppressive and a very minimal curative schizonticidal effect. The tablet suspensions from the leaf and bark at a concentration of 800 mg/kg and chloroquine at a concentration of 62.5 mg/kg body weight produced average percentage (%) parasitaemia of 79.6%, 68.2% and 99.5% for leaf, bark and chloroquine, respectively, in chemosuppression. Also in the prophylactic treatment, the tablet suspensions at 800 mg/kg and pyrimethamine at a concentration of 0.35 mg/kg gave an average parasitaemia reduction of 75.3%, 65.6% and 98.3% for the leaf, bark and pyrimethamine, respectively. There was a clear indication that moderate beneficial effect.

❖ **Antidiabetic Activity :**

The pharmacological hypoglycemic action of *Azadirachta indica* has examined in diabetic rats. After treatment for 24 hrs, *Azadirachta indica* 250mg/kg (single dose study) reduced glucose (18%), cholesterol (15%), triglycerides (32%), urea (13%), creatinine (23%), and lipids (15%). Multiple dose study for 15 days also reduced creatinine, urea, lipids, triglycerides and glucose. In a glucose tolerance test in diabetic rats with neem extract 250 mg/kg demonstrated glucose levels were significantly less compared to the control group. *Azadirachta indica* significantly reduce glucose levels at 15th day in diabetic rats.

❖ **Antiulcer Activity :**

Neem bark extract reduced human gastric acid hypersecretion, and gastro-esophageal and gastroduodenal ulcers. After 10 weeks, the duodenal ulcers were nearly fully healed; after 6 weeks one case of esophageal ulcer and gastric ulcer were fully healed.

❖ **Traditional uses of neem:**

In many parts of the world, the herbal remedies from medicinal plants are used traditionally, but their access to formal healthcare are limited). World Health Organization (WHO) has estimated that as many as 80% of world's population rely on herbal traditional medicines as their primary health care This means that the use of natural products as medicine has been widely practiced through folklore from ancient time in world up to now. Over 3000 years the neem tree is well known in India and its neighbouring countries.

• Industrial Uses Of Neem

Neem oil leaves and neem extracts are used to manufacture health and beauty care products by different industries (Jattan et al., 1995). Some of such products are soaps, bath powders, shampoos, lotions and creams, toothpastes, neem leaf capsules to increase immunity and as a skin purifier, insect repellents, pet care products, etc.(Puri,1999). In India, Neem oil is not used for cooking purposes it is used for preparing cosmetics and toiletries (soap, hair products, body hygiene creams, hand creams).Powdered leaves are a major component of at least one widely used facial cream. Purified neem oil is also used in nail polish and other cosmetics (Puri,1999). Eighty percent(80%) of India's supply of neem oil is now used by neem oil soap manufacturers Although much of it goes to small scale specialty soaps, often using cold-pressed oil, large scale producers also use it, mainly because it is cheap. Additionally it is antibacterial and antifungal, soothing and moisturising. It can be made with up to 40% neem oil (Bradtke, 2013).[12]

Recent Marketed Products Of Neem:

1. Neem Anti-acne Face Wash:

Acne :

Acne vulgaris is an extremely common disorder of skin (pilocebaseous unit) that affects virtually all individuals at least once during life. The incidence of acne peaks at teenage, but substantial numbers of men & women between 20-30 years of age are also affected by the disorder.[14]

Acne vulgaris or simply known as acne is a human skin disease characterized by skin with scaly red skin (seborrhea), blackheads and whiteheads (comedones), pinheads (papules), large papules (nodules), pimples and scarring . Acne affects skin having dense sebaceous follicles in areas including face, chest and back . Acne may be of inflammatory or non-inflammatory forms.[15]



EVALUATION OF FORMULATION

- **Physical evaluation:**

Physical parameters such as colour, appearance & consistency were checked visually.

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Washability

Formulations were applied on the skin & then ease & extent of washing with water were checked manually.

- **pH**

pH of 1% aqueous solution of the formulation was measured by using a calibrated digital pH meter at constant temperature.

Spreadability :

. Spreadability Spreadability denotes the extent of area to which the gel readily spread on application to skin or the affected part. The bioavailability efficiency of a gel formulation also depends on its spreading value [2]. The spreadability is expressed in terms of time in seconds taken by two slides to slip off from the gel, placed in between the slides, under certain load. Lesser the time taken for separation of two slides, better the spreadability. Two sets of glass slides of standard dimensions were taken. The herbal gel formulation was placed over one of the slides.

The other slide was placed on the top of the gel, such that the gel was sandwich between the two slides in an area occupied by a distance of 6 cm along the slide. 100gm weight was placed upon the upper slide so that the gel between the two slides was pressed uniformly to form a thin layer. The weight was removed & the excess of the gel adhering to the slides was scrapped off. The two slides in position were fixed to stand without slightest disturbance & in such a way that only the upper slide to slip off freely by the force of weight tied to it. A 20gm weight was tied to the upper slide carefully. The time taken for the upper slide to travel the distance of 6 cm⁷ separated away from the lower slide under the influence of the weight was noted. The experiment was repeated three times both formulated gels & marketed gel & the mean time taken for calculation .

Spreadability was calculated by using the following formula, $S = M \times L / T$

Were, S- Spreadability

M- Weight tied to the upper slide (20gm)

. L- Length of the glasss (6.5cm).

T- Time in sec.[14]

**Ingredients:**

Sr. No.	Ingredients	Uses
1	Neem leaves (Azadirachta indica)	Antibacterial, anti-fungal, anti-inflammatory, antiseptic and highly beneficial for oily and acne prone skin.
2	Turmeric (Curcuma longa)	Antibacterial, antifungal and It protects the skin from many skin infections and also adds glow to the face.
3	Nutmeg seed (Myristica fragrance)	Antibacterial, anti-inflammatory, antiseptic, bactericide.
4	Liquorice root (Glycyrrhiza glabra)	Delivers valuable soothing properties to the skin. Highly rejuvenating and nutritive qualities are attributed to it.
5	Honey	Light humectant and nutrient used as a thickening agent to give body to facial masks, creams and lotions
6	Shahi jeera	As perfume.
7	Lemon juice	To lighten skin and reduce blemish marks on the skin. It also quite effective for treating acne and pimples. as a natural pH adjuster in cosmetics
8	Xanthan Gum	A gum produced by the pure culture fermentation of a carbohydrate also called Corn Sugar Gum. It is used as a non-toxic thickener and stabilizer.
9	Orange peel extract	Anti-oxidant, anti-inflammatory, anti-microbial Orange-peel properties can maintain the natural balance of skin oils and tighten the skin by absorbing excess oils and removing dead skin cells.
10	Rose water	Used as solvent; it also has antibacterial and antiseptic properties which eventually cure acne
11	Walnut	Scrubbing action of walnut granules helps break up The mild oil deposits and clear away dead skin cells and debris.

[14]

Benefits:

Acne is caused when the pores on your skin become blocked, keeping the sebum (that your body produces naturally) from escaping and allowing it to build up behind your pore. This buildup is the pimple. The pain that you may experience is due to an infection of bacteria that feed off of the sebum. As gross as it sounds, acne is among the most common skin conditions plaguing us today. The antibacterial and antifungal properties present in Neem helps combat acne. Neem contains a substance similar to aspirin that helps destroy the acne causing bacteria. Further, since Neem possesses high fatty acids, applying a few drops of Neem on acne and leaving it overnight helps get rid of acne and protects the skin from further breakouts.[16]

2. Neem Active Toothpaste :



Product name: Neem Active Toothpaste from Henkel India. The company also is known for its Margo soap as its trademark.

Product description: A light green tooth paste.

Flavour: It has an added mint flavour.

Packaging: a 200 gram tube with a nozzle cap.(Pic attached)

Cost: INR 65(MRP) in regular stores plus some stores offer discount also. It costs higher if purchased online.

Direction to use: Open the cap and squeeze the tube from the bottom to the top or best results.

Neem Active Toothpaste claims to offer a complete oral care.

It is 100% vegetarian and have efficacy in preventing cavities. long lasting freshness and strengthening teeth and gums.

Ingredients:

It contains a long list of hard to pronounce compounds but the active ingredients are calcium carbonate, Glycerin, hydrated silica, sodium carboxymethylcellulose, Neem extract, sodium monofluoro phosphate and Tea Tree oil among others. These are all natural and nature derived ingredients. The toothpaste is 98% herbal.

Properties:

Because it contains Neem(Azadirachta) extract which is a strong naturally occurring anti-bacterial, the toothpaste helps to fight germs. The product also claims to prevent bleeding gums and inflammation. The mint flavour helps fight bad breathe for hours.[17]

Benefits:

Neem oil in the neem toothpaste has many oral benefits. It is anti-bacterial and anti-diabetic, a powerful antioxidant and astringent, with anti-inflammatory properties. Not only do neem oil's antibacterial properties help control, fight infection, and prevent plaque from building up, but it may also help reverse the effects of gingivitis. Many people prefer to use toothpaste with neem, rather than just using the bark or extract, as it has been shown to greatly improve dental hygiene when used together. Neem is also often recommended for relieving toothaches and the related inflammation.[18]

3. Neem Hair Oil :

Neem oil for hair care is an age-old traditional remedy for hair problems. Neem has had countless health benefits associated with it throughout history. No wonder its oil is also touted as a treatment for scalp and hair problems. We have examined all the scientific evidence behind these claims in this article. Read on to find out how neem oil benefits your hair. Neem oil is extracted from the seeds of the neem tree. It may help cool the scalp and even promote smooth, shiny hair. The oil may also possess anti-microbial, anti-septic, and anti-dandruff properties that promote scalp health.[19]



ANTI-FUNGAL:

Like antibacterial and antimalarial properties of neem, the antifungal properties are also given great importance in the field of science. *Azadirachta indica* (Neem) leaf extract was taken to test its antifungal activity against three fungal species - *Aspergillus flavus*, *Alternaria solani* and *Cladosporium*. neem oil has been the the cure for many fungal diseases caused by the above fungi. It has been a lifesaver.[20]

MEDICINAL PROPERTIES OF NEEM:

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.[20]



Fig : Kama Neem Oil.

Benefits of neem oil for hair:

Packed with antioxidants that prevent hair loss, Neem oil is the nature's cure to all hair and scalp problems. Wondering how to use Neem oil for hair? Here's what we recommend - Dilute equal parts (50/50) of Neem Oil with Sweet Almond/Sesame Oil and gently massage the oil directly into the roots of the hair and scalp. After allowing it to work for 30 minutes, cleanse your hair with a Natural cleanser.

1. Promotes hair growth and prevents baldness:

Neem Oil has regenerative properties that support healthy cell division and stimulate hair follicle growth and function. It also helps in countering hair thinning caused by pollution, stress or medication. Therefore, regular application of the neem oil promotes thicker, stronger, and more luxurious hair growth. Neem oil's anti-inflammatory, antibiotic, and antioxidant properties prevent baldness as it treats scalp issues like scalp psoriasis, which can lead to permanent hair loss if left untreated.

2. Conditions dry hair:

Regular application of neem oil will result in lustrous and healthy hair. Neem oil contains several fatty acids – such as linoleic, oleic, stearic acids which nourish the scalp and hair. These fatty acids present in Neem oil revitalize and restore dry, under-nourished or rough hair.

3. Helps with dandruff and itching:

The primary cause of dandruff is fungi known as Candida and Malassezia. Neem oil is effective against these fungi due to its antifungal properties. Neem oil also provides relief from inflammation, itchiness, and irritation that results from dandruff.

For those who are prone to dandruff, Neem oil should be used regularly. It maintains the pH balance of the scalp and prevents dandruff formation.

4. Treats head lice:

According to studies, Neem oil is known to be effective in treating head lice without any side effects. Neem contains azadirachtin, an insecticidal ingredient, which disrupts the growth and reproduction of lice and eventually kills them. The pungent smell of Neem oil repels lice hence it is also used as a preventive treatment.

To get rid of lice, apply neem oil on your scalp and leave it overnight. The next day, comb your hair with a thin comb to remove dead lice from your hair.[21]

How to use neem oil in your skin:

1. Soak a cotton ball or pad in a few drops of diluted neem oil.
2. Apply the oil to the desired area in a light dabbing motion. Do not rub it rigorously.
3. Allow it to get absorbed by your skin for about 20 minutes.
4. Wash the neem oil off with warm water.
5. Do this every day for the best results.[22]

4. Neem soap:

Herbal soap preparation is a medicine or drugs it contain Antibacterial & antifungal agents which e mainly uses of part of plants such as like leaves, stem, roots & fruits to treatment for a injury or disease or to achieve good health . [23]

Chemicals :

These include stearic acid, soft paraffin, ethanol, orange oil

Collection, identification and processing of plant

The leaves of *Azadiracta indica*, *Ocimum tenuiflorum*, and seeds of *Sapindus mukorossi* and pods of *Acacia concinna* were collected from different matured plant. The leaves were dried in hot air oven, pulverized and stored in airtight bottles for the studies .

Extraction:

The *Azadiricta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi* and *Acacia concinna* powder was extracted with water by decoction process. 9 gm of above stated powder was taken in conical flask and extracted with water for four hours with occasional agitation. Then filtered.



Botanical name: Azadiractaindica

Part typically used: Leaves

Colour: Green

Description:-

Compound alternate, rachis 15-25cm long, 0.1cm thick, leaflet with oblique, serrate, 7-8.5 cm long and 1-1.7 cm wide slightly yellowish green in color. Constituents:- Flavonoids, Alkaloids, Azadirone, Nimbin, Nimbidin, Terpenoids, Steroids, Margosicacid, Vanilic acid, Glycosides, B-sitosterol, Nimbectin, Kaempeerol, Quercusertin are present

Physical evaluation :

The herbal soap formulated was evaluated for the following properties:

a) **pH :-**

the pH was determined by using pH paper .the pH was found to be basic in nature

b) **Foam retention:-**

25 ml of the one percent soap solution was taken into a 100 ml graduated measuring cylinder the cylinder was covered with hand and shaken 10 times . the volume of foam at 1 minutes interval for 4 minutes was recorded . it was found to be 5 minutes .

c) **Foam height : 10 cm**

d) **Antimicrobial test :-**

there was various study conducted on antimicrobial activity of neem and hence according to research paper by antimicrobial activity of Azadiricta indica leaf, bark and

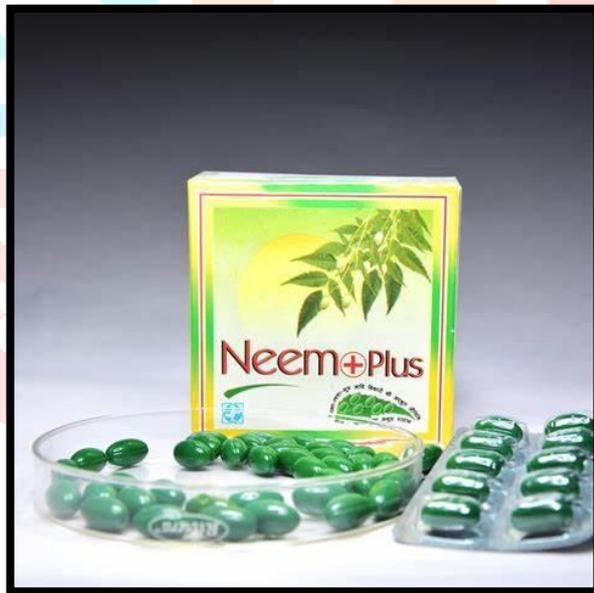


Ingredients :

Sr. No.	Ingredients	Quantity (%)	Use
1	Stearic Acid	1 gm	Hardening
2	Soft Paraffin	0.70	Hardening
3	Ethanol	5ml	Solvent
4	Neem Powder	4gm	Antibacterial
5	Reetha	3gm	Surfactant
6	Shikakai	2gm	Cleanser
7	Tulsi	1gm	Antiviral
8	Orange oil	q.s	Perfume

Neem capsule

Neem capsules are the extract of fresh neem leaves or finely powdered dried neem leaves available in a capsulated form. You can easily find them in the market from different brands. But it is essential to choose the product of a reputed and reliable brand to ensure that the capsules contain only pure neem extract. Neem capsules offer numerous benefits for our skin, hair, and health. We have listed the major ones below:



❖ Skin benefits of capsule:

1. Bring Out Natural Glow

Regular intake of neem capsules can help us purify our blood efficiently. In addition, it cleanses our body from the inside, which helps maintain healthy, blemish-free, and glowing skin.

2. Prevent Acne And Pimples

Neem capsules have amazing antibacterial qualities. Hence, it can help us combat acne-causing bacteria and keep all sorts of breakouts away.

3. Make The Skin Toxin-Free

As neem capsules can detoxify our body perfectly, the chances of developing skin infections go down significantly. In other words, the intake of these capsules can reduce the symptoms of eczema, psoriasis, dermatitis, etc. easily.

4. Treat Various Skin Conditions

Various minor to major skin conditions like rashes

5. Keep Aging At Bay, itching, scabies, warts, boils, and so on can also be treated by taking in neem capsules regularly.

Being rich in the antioxidant properties of neem, these capsules can protect our skin from free radical damage and work as good anti-aging agents. Therefore, you can expect to stay away from signs of aging like wrinkles, fine lines, age spots, etc.

❖ Hair benefits of neem capsule:

1. Improve Scalp Health

Neem capsules can purify our blood and improve the water balance in our body. As a result, our dry and itchy scalp becomes healthy and dandruff-free. It eventually gives us beautiful, shiny hair.

2. Put A Stop To Hair Loss

We all know that an unhealthy scalp and dandruff are the two biggest reasons for hair loss. But as neem capsules can successfully cure both of these issues, we get rid of problems like acute hair loss, alopecia, etc.

3. Eliminate Head Lice

If you are suffering from head lice, neem capsules can be a good solution for you.

❖ Health benefits of neem capsule:

1. Reduce Gastrointestinal Issues

Intake of a 60 mg. neem capsule every day helps in improving the health of our gastrointestinal tract. For example, it can heal upset stomach fast and keep gastric ulcers at bay by fighting against certain bacteria.

2. Keep Diabetes Under Control

Take in neem capsules every day in the morning on an empty stomach, and you will get rid of diabetes mellitus after a few months successfully. In addition, it can lower the glucose levels in our bloodstream significantly, thereby treating several wounds associated with it. [25]

Future Aspects :

- Cure asthma
- Control diabetes
- Keep skin healthy
- Maintain oral health
- Help to treat or prevent certain sexually transmitted disease
- Help boost the immune system

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