

Unlocking Nature's Bounty: A Comprehensive Review of Neem, Liquorice, Turmeric, and Grapefruit in Skincare.

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ABSTRACT

Neem, Turmeric, Liquorice and Grapefruit is the natural product that is now a day frequently used in the field of the cosmetology through there are various indications for its use, have wide range of medicinal properties. They are largely used in naturopathy, unani and homeopathic medicine, further it elaborates a vast array of biologically active compounds. All parts of neem tree, leaves, flower, seed, fruit, root and bark have been used traditionally for the treatment of inflammation, infection, skin disease etc. The study has reported that the above herbal ingredients (neem, liquorice, grapefruit and turmeric) have antimicrobial, anti-inflammatory, anti-bacterial and exfoliating properties which helps to lighten the skin and enhance the product.

Key words – Neem, Turmeric, Liquorice, Grapefruit, skin

❖ NEEM

• HISTORY OF NEEM

Neem is believed to have come from Assam and Burma, where it grows widely in the Siwalik hills and central arid zone. But its precise origin is unknown; some claim neem is indigenous to the Indian subcontinent as a whole, while others associate it with arid forests across Pakistan, Sri Lanka, Thailand, Malaysia, Indonesia, and much of South and Southeast Asia. The tree is most commonly used in India. It is grown from sea level to an elevation of about 700 meters, in tropical to subtropical climates, from the southern tip of Kerala to the Himalayan hills, and in semiarid to wet tropical climates. Neem was brought to Africa earlier this century, as was already mentioned (see

sidebar, page 85). It is now widely established in at least thirty nations, especially in those around the southern edge of the Sahara, where it has grown to be a significant source of lumber and fuel. Despite being largely seen as natural, it has not turned into a nuisance. It does appear to be quite "domesticated," since it seems to flourish in towns and villages.



FIG. 1. NEEM PLANT

• PLANT

This tree grows quickly, reaching a height of 5 to 15 meters. Its branches are widely spaced, and its trunk is relatively short and straight, with a potential diameter of 0.8 to 1.2 meters. Its bark is tough, and in May, the plant blooms. The flowers are fragrant, tiny, and white. It is a hermaphrodite flower, containing reproductive organs from both sexes in the same flower.

• THE LEAF

The leaf is 38–45 cm long, petiolate, alternating, compound imparipinnate, and has 7–19 leaflets. The petiole is long, cylindrical, and green in color, with an expanded, swelling base. Its

dimensions are 0.1-0.3 cm in diameter and 6-9 cm in length. The lengthy, cylindrical rachis is green in hue, with dimensions of 0.15–0.3 cm in diameter and 15-20 cm in length. The pamphlets are opposing, petiolate, lanceolate, with lighter-colored lower surface and dark green top surface, acuminate apex, and asymmetric base. It also has serrate edges. With pinnate reticulate venation and an almost glabrous appearance, the midrib is more noticeable on the bottom surface. The pamphlet is 3–9 cm long and 1-3 cm wide, with a papery feel. The petiolule is cylindrical and short.

• **THE STEM AND BARK**

The old branches range in length from 1.5 to 3.5 meters, are firm, cylindrical, and have a brown tint. They also have rough surfaces coated in a substantial layer of brown bark. The juvenile branches have a green hue and break glabrously with fibrous breakage. The stem has a faint, distinct smell, and unpleasant flavor. The bark has a brown

hue, is strong, somewhat thick, and can be curled, channeled, or quill-shaped. The outer bark is fissured, exhibiting longitudinal and transverse wrinkles, while the inner bark is silvery brown. The bark tastes sharp and harsh, and it has no smell. With a fibrous fracture when it breaks.

• **THE FRUIT**

The smooth, olive-like drupe fruits of *A. indica* A. Juss. range in shape from elongated oval to almost roundish, are edible, and are 1.2–2.0 cm in length. When the fruits ripen, they change from green to brown. Neem trees are abundant; fruit can be produced as early as three to five years of age. and reach full productivity around 10 or 12 years old, Epicarp is slender and brown. Mesocarp: a delicious pulp that is 0.3–0.5 cm thick, yellowish white, and slightly fibrous. Endocarp: The fruits' hard, white inner shell that encloses a single, elongated seed with a brown seed coat.

TABLE .1.1 ACTIVE COMPONENT OF NEEM

| PLANTS PARTS | ACTIVITIES | FINDINGS OF THE STUDY |
|---|-------------------------|---|
| LEAF, FLOWER AND STEM BARK | ANTIOXIDANT | Extracts from leaf, flower, and stem bark possess higher antioxidant activity |
| FLOWER AND SEED | FREE RADICAL SCAVENGING | Ethanol extracts of flowers and seed oil were found to possess greater free radical-scavenging activity |
| LEAVES | WOUND HEALING | Aqueous extract of leaves showed significant reduction in the longest diameter wounds. |
| LEAVES | WOUND HEALING | Wound-healing properties of the aqueous extracts of neem leaves are supposed to act biochemically through inflammatory and neovascularization |
| FRUITS SKIN AND ITS SPECIFIC INGREDIENT, AZADIRADIONE | ANTI-INFLAMMATORY | Animals treated with 100 mg/kg dose of fruit skin extract and azadiradione exhibited significant anti-inflammatory activities |
| SEED OIL | ANTI-INFLAMMATORY | Oil showed increased inhibition of edema with the progressive increase in dose from 0.25-2 ml/kg body weight |
| LEAF | HEPATOPROTECTIVE | Leaf extract significantly reduced elevated levels of AST, ALT, and gamma-GT. In addition to this, paracetamol-induced liver necrosis was also found to be reduced as observed macroscopically and histologically |
| LEAF | NEUROPROTECTIVE | Leaf extract has also been checked to study its neuroprotective effects and it has shown quite efficient reversible effects of cisplatin |

| | | |
|-----------|---|---|
| LEAF | NEPHROTOXICITY | Leaf extract has shown significant protective effects against cisplatin-induced nephrotoxicity as this extract exhibits antioxidant, anti-inflammatory, and other free radical scavenging activities |
| LEAF | IMMUNOMODULATORY | Neem infusion has been found to successfully improve the antibody titer growth performance when used at the level of 50 ml/l of fresh drinking water |
| FLOWER | ANTIFERTILITY | Extract caused a statistically significant reduction in the number of ova sheds in the morning of estrus |
| OIL | ANTIFERTILITY | Intra-vas administration of oil resulted in a block of spermatogenesis without affecting testosterone production |
| STICK | REDUCTION IN PLAQUE AND GINGIVAL TREATMENT OF DENTAL CARIES | Significantly reduce the plaque and gingival scores as compared to baseline Extracts of neem have a strong antimicrobial activity and suggest that it can be useful in the treatment of dental caries |
| ROOT BARK | ANTI-DIABETIC | Neem root bark extract (NRE) was given in the dose of 800 mg/kg showed significant reduction in blood sugar level. Moreover, it reduced blood sugar level by 54% after 4 hours as comparison to control. But in comparison to glibenclamide it was not showing significant result |
| SEED | ANTI MICROBIAL | Minimum inhibitory concentration of seed extracts was 31 µg/ml. for all the dermatophytes tested. Furthermore, seed extract at 15 pg/ml. concentration was noticed to be sufficient for distorting the growth pattern of the organisms tested |
| BARK | ANTI MICROBIAL | Bark extract confirmed that neem bark extract significantly blocked HSV-1 entry into cells |

❖ LIQUORICE

GlycyrrhizaglabraA genus of perennial herbs and underbushes, Linn is found worldwide in warm temperate and subtropical climates. It is a member of the Leguminosae family. Glycyrrhizaglabra Linn, sometimes referred to as sweet wood and licorice in English,

Mulethi, or Jothi-madh in Hindi, Yashtimadhuh In Sanskrit, Madhuka; in Bengali, Jashtimadhu; in Telugu, Yashtimadhukam; in Gujarati, Jethimadhu; and in Tamil, Atimaduram. Glycyrrhizin, the main ingredient in licorice extracts, is extensively used in foods, tobacco products, traditional medicine, and herbal remedies. It is grown for its subterranean stems, or rhizomes, which are rich in glycyrrhizin, a chemical that has fifty times the sweetening power of sugar. It is commonly grown in Punjab and the southern

Himalayan regions of India , as well as in the Mediterranean basin of Africa, southern Europe, Delhi, Jammu, and India's South.



FIG.2.LIQUORICE

- **TAXONOMIC CLASSIFICATION**

Class: Equisetopsida.

Subclass: Magnoliidac

Superorder: Rosanae

Order: Fabales

Family: LeguminosaeFabaceae-Papilionoideae

Genus: Glycyrrhiza Species: glabra Linn

- **CHEMICAL CONSTITUENTS**

More than 400 chemical compounds made up of triterpenesaponins have been identified from the Glycyrrhiza species. Flavonoids, such as isoliquiritoside and liguritoside, are thought to be the cause of the licorice's bioactivities. The information in Different plant species and regional sources can cause major variations in these saponins and flavonoids. polysaccharides, pectins, glucose, sacharose, steroid hormones, amino acids, and mineral salts Saponins with triterpenoids Glycyrrhizin (2–15%), sometimes referred to as glycyrrhizic acid, is found as potassium and calcium salts (Bradley, 1992). The following substances are present in the body: starch, glucose, asparagin, manitol, atropine, choline, betaine, progesterone, steroids, tannins, and bitter principle (glycyamarin). An oleanane-type triterpenesaponin is the main ingredient in the roots and stolons of Glycyrrhiza plants that gives them their sweet flavor, glycyrrhizin. This substance is a mixture of glycyrrhizic acid salts with potassium, calcium, and magnesium that ranges from 2 to 25. range in percentage. Glycyrrhizic acid, a naturally occurring saponin, is a molecule made up of two glucuronic acid molecules, a hydrophilic portion, and a fragment of glycyrrhetic acid.

1. LICORICE ROOT BENEFITS FOR SKIN

Licorice boasts a number of active ingredients and properties that give your skin some serious love, especially when it comes to protecting and brightening. Here are just a few of the reasons why licorice root benefits your skin

1: Helps hyperpigmentation

Improving hyperpigmentation is one of this plant's most well known attributes. Hyperpigmentation occurs when your skin produces more melanin in certain patches or spots than in others, giving skin an uneven tone and darkened appearance. This often happens because of free radical exposure: free radicals can damage melanin forming skin cells and prompt them to produce excess pigment. Licorice root combats this process by hindering melanin and free radical production. That's part of why gentle, effective

dark spot removers contain licorice root extract to help even out skin spots.

2: Carries glycyrrhizin, a powerful antioxidant

Licorice does well in treating atopic dermatitis, rosacea, and psoriasis - and you can thank glycyrrhizin (glys-err-eye- zin) for that! It's the acid responsible for making licorice taste sweet. The official name for the licorice plant is Glycyrrhizaglabra root, which is what you'll find as the key ingredient in our Brightening Serum. Glycyrrhizin is anti-inflammatory, which means less redness and irritation for inflamed, irritated skin. As an antioxidant, it protects our skin against free radicals. Some of the most obvious signs of free radical damage show up on our epidermis, and sun damage is one of the most prevalent stressors in daily life. This is why it's so important to protect yourself from UV rays with a clean, cruelty-free sunscreen!

3: Contains glabridin, a UV-fighting super ingredient

Glabridin (glab-rye-din) is one of the most active ingredients in licorice root extract. This substance helps diminish any dark spots you have from scarring or sun damage. It also prevents pigmentation from UVB rays by inhibiting tyrosinase, an enzyme that causes dark pigments after sun exposure.

4: Protects skin with Licochalcone A

This defensive licorice root benefit comes to us from another active ingredient, Licochalcone A (lick-uh-chal-cone). It helps your skin produce higher levels of antioxidants, fortifying your skin's defenses and preventing UV damage in the process. Not to mention, it can protect skin from damage even after unprotected exposure to UV rays

❖ TURMERIC

- Curcuma longa (Turmeric)

Curcuma longa L. inhabits places that are tropical or subtropical. The Zingiberaceae family, which includes the seventy species of the clever plant Curcuma, has long been used as a spice, food preservative, and coloring agent in many parts of the world. It functions as a typical home remedy in conventional medicine for a variety of ailments



FIG.3.TURMERIC

• **Active constituent**

Curcuminoids; curcumin (diferuloylmethane, the primary constituent responsible for yellow color of turmeric), demethoxycurcumin, and bisdemethoxycurcumin.

• **Properties**

1. In addition, volatile oils (tumerone, atlantone, and zingiberene) also have pharmacological activity. In addition, sugars, proteins, and resins are also present in turmeric.

2. Turmeric is an amazing ingredient for skin care. It can resolve a number of skin problems, including acne, skin darkening, skin pigmentation, rashes etc. It has been used since ages to boost the health and glow of the skin.

3. Turmeric works wonderfully for skin brightening and lightening. Plus it contains an anti oxidant compound known as curcumin, and curcumin comes with multiple skin benefits. It fights off acne, acne scars, and also reduce skin pigmentation.

4. C. longa possesses multiple pharmacological activities, including antioxidant, antimicrobial, anti-inflammatory, anti-carcinogenic, anticoagulant, antidiabetic and immunological.

• **DERMETOLOGY**

Since women have always applied turmeric topically, it's possible that this was the first cosmetic ever discovered. It is thought to improve complexion, lessen acne, and minimize facial hair. Before taking Lauthor's observations, a lot of ladies in Tamil Nadu still use turmeric to their faces on a daily basis. Products for skin care have made use of the color yellow. The hydrogenate tetrahydrocurcumin is off-white in color. kind of curcumin applied topically as an antioxidant for the skin. When included into moisturizers, it might stop lipids from going rancid." Curcuminoids exhibit promise as skin-

lightening, anti-inflammatory, and antioxidant ingredients in cosmeceuticals. Curcuminoids in vitro inhibit Byaluronidase, elastase, and collagenase When applied for an extended period of time, like six months, curcumingol has been shown to improve the appearance of photodamaged skin conditions such as pigmentary changes, solar elastoses, actinic poikiloderma, solar lentigines, and actinic keratosis. It may also encourage the apoptosis of cells with DNA damage. It's currently being assessed as an eco-friendly hair coloring agent. The industries of soap, cosmetics, and perfumes may find use for essential oils.

❖ **BENEFITS**

1. Adds Natural Glow To Your Skin. Turmeric is considered to be a potent ingredient for skin lightening and revealing glow.
2. Treats Acne Breakouts.
3. Helps With Atopic Dermatitis.
4. Slows Down Skin Ageing.
5. Helps With Psoriasis.
6. Reduces Dark Circles.
7. Moisturizes Dry Skin.

❖ **GRAPE FRUIT**

- Scientific classification



FIG.4.GRAPE FRUIT

Kingdom: plantae

Order: sapindales

Family: rutaceae

Genus: citrus

Species: c. Xa. F. Aurantium

Binomial name -citrus x aurantium f. Aurantium

Synonyms : citrus x paradisi macfad

The grapefruit (Citrus x aurantium f. aurantium, Syn: Citrus x paradisi) is a subtropical citrus tree known for its relatively large, sour to semi-sweet, somewhat bitter fruit. The interior flesh is segmented and varies in color from pale yellow to dark pink/red, Grapefruit is a citrus hybrid that

originated in Barbados in the 18th century. It is an accidental cross between the sweet orange (*C. sinensis*) and the pomelo or shaddock (*C. maxima*), both of which were introduced from Asia in the 17th century. It has also been called the forbidden fruit. In the past it was referred to as the pomelo, but that term is now mostly used as the common name for *Citrus maxima*

• BENEFITS TO SKIN

1. Is A Powerful Antioxidant

This fruit is a potent source of vitamin C, making it a great antioxidant. It helps ward off damage caused by exposure to environmental factors such as UV rays and pollution. It also makes grapefruit a great skin brightener; it inhibits the excess production of melanin, preventing dark spots and fading the ones you already have. It also contains vitamin A, which makes it great for ageing skin as it increases skin cell turnover, reducing fine lines and wrinkles

2. Gently Exfoliates Your Skin

Grapefruit is chock full of various AHAs namely citric, tartaric and malic. While these mild, they dissolve the "glue" holding dead skin cells together. As it is so gentle, it is great for sensitive skin too. Ultimately, it'll leave you with fresher, brighter skin.

3. Brightens The Skin

If you're looking for vibrant, healthy skin, this is the skincare ingredient to add to your shelf. Rich in beta carotene, grapefruit transforms dull, dehydrated skin and leaves your complexion beautifully radiant. It also contains lycopene that reduces redness and inflammation, leaving you with even-toned skin.

4. Produces Collagen

The vitamin C content in this stimulates the biosynthesis of collagen. Collagen is the structural protein necessary in the maintenance of skin elasticity. It depletes with age, causing wrinkles, sagging and dullness. Vitamin C is crucial in the production of collagen, meaning it'll keep your skin looking and feeling younger and firmer for longer.

5. Reduces Free Radical Damage

Free radicals are elements that attack healthy cells, causing premature cell death. Grapefruit directly attacks these free radicals, making sure they don't cause damage to the skin,

by binding to these free radicals, rendering them unable to do any damage. It also helps restore those damaged skin cells by promoting collagen synthesis

6. Promotes A Healthy Skin Microbiome

Grapefruit also contains sugars which are prebiotics - meaning they are important for balancing and keeping the skin biome healthy. While probiotics are good bacteria which keep skin healthy, prebiotics are what they feed on - you can't have one without the other! A healthy skin microbiome is what keeps the skin balanced, resilient and less reactive.

7. Deep Cleanses

But you didn't know that this humble fruit is a great natural source of salicylic acid. It deep cleanses the pores and heals breakouts to dramatically improve the texture of the skin, it also dissolves skin impurities to unclog the pores. It also has antiseptic and antibacterial properties making it great for acne-prone and oily skin.

CONCLUSION

The study has reported that the above herbal ingredients (neem, liquorice, grapefruit and turmeric) have anti-microbial, anti-inflammatory, anti-bacterial and exfoliating properties which help to lighten the skin and remove acne, although the neem tree is an important herbal plant in India it is still uncharted and untrapped by the modern dermatologist. Scientific evidence has brought about the possibilities of the utilization of neem, liquorice, grapefruit, turmeric extract will enhance the face product

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