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Formulation & Evoluotion Of Neem Soap

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❖ INTRODUCTION:

Neem soaps are known for various beneficial and medicinal compounds that are extremely beneficial for the skin.

Ayurveda cures most skin and hair concerns, so skincare products with such ingredients have a special place in our lives.

Neem trees are attractive broad-leaved evergreens that can grow up to 30 m tall and 2.5 m in wide. Their spreading branches form rounded crowns as much as 20 m across. They remain in leaf except during extreme drought, when the leaves may fall off.



❖ HISTORY OF NEEM SOAP :

➤ Ancient and Traditional Use

- People traditionally used neem leaves or paste for skin problems and bathing. The idea of mixing neem with soap likely evolved from this practice.

➤ Emergence of Neem Soap

- The modern neem soap is a relatively recent development, likely emerging in the 20th century as natural and herbal soaps became commercially viable.
- As soap-making technology advanced, neem oil—pressed from the seeds—became a key ingredient in soaps aimed at treating acne, eczema, and skin infections.

➤ Commercial Production

- By the 1970s–1980s, neem-based products, including soap, began to be mass-produced in India and later globally.
- The global interest in natural and organic products in the 1990s and 2000s helped neem soap gain popularity outside of South Asia.

➤ Today

- Neem soap is produced worldwide and is marketed for natural skincare, especially in eco-conscious and Ayurvedic product lines. It is often used as an antiseptic, anti-acne, and insect-repellent soap.

❖ PLANT PROFILE:

Synonyms:-Neem, (Azadirachta indica), margosa,

Vernacular names: -

Hindi: neemneem

Kannada: bevu/kirubevuturakabevu

Malayalam: Ariyaveppu, Veppu



❖ SCIENTIFIC CLASSIFICATION:

Kingdom: kingdom plantae

Division: magnoliophyta (also known as Angiosperms)

Class: Magnoliopsida

Order: Sapindales

Family: Meliaceae

Genus: Azadirachta

Species: Azadirachta indica

❖ **INGREDIENT:**

Sr.no.	Ingredients	Uses
1	Neem oil	Anti-bacterial agent
2	Reetha	Foaming agent
3	Tulsi oil	Anti-bacterial & anti-fungal agent
4	Coconut oil	Moisturizing and lather
5	Essential oil	Skin benefits
6	Olive oil	Moisturizing agent
7	Palm oil	Cooking oil
8	Castor oil	Cosmetics
9	Lye (sodium hydroxide)	Soap and detergent manufacturing
10	Distilled water	A necessary component in the soap making process

❖ NEEM OIL

- Synonym:** Margosa oil
- Biological source:** Oil obtained from fully matured seeds of *Azadirachta indica*
- Family:** Meliaceae
- Geographical source:** India, Myanmar, Tropical countries
- Chemical constituent:** Composed of triglycerides, triterpenoids, Steroids, nimbin, nimbodin, Omega6, Omega9, Palmitic acid, Stearic acid, Omega, Palmitoleic acid.

Uses:-

1. Has antifungal, antibacterial, and antiviral properties
2. Used in cosmetics (e.g., soaps, shampoos, creams) for skin and hair health
3. Applied in traditional medicine for treating skin conditions, wounds, and infections
4. Plant protection & organic farming.



❖ REETHA

- Synonym:** Soapnut, Soapberry
- Biological source:** Dried fruit of *Sapindus mukorossi* Gaertn.
- Family:** Sapindaceae
- Geographical source:** Reetha is native to and widely found in India—Especially in the Himalayan region (from Himachal Pradesh to Assam), Uttar Pradesh, and West Bengal.
- Chemical constituent :** Saponins (main active compounds, e.g., mukorozic acid) Sugars, Fatty

acids , Tannins , Flavonoids

Uses:-

1. Natural Cleanser: Used as a mild, natural shampoo and detergent due to its saponin content.
2. Hair Care: Prevents dandruff and promotes hair growth in Ayurvedic practices.
3. Skin Care: Used in herbal formulations to treat eczema and psoriasis.



❖ TULSI OIL

Synonym: Holy Basil Oil or Indian oil

Biological source: Essential oil obtained from the leaves and flowering tops of *Ocimum sanctum* Linn. (also known as *Ocimum tenuiflorum*)

Family: Lamiaceae

Chemical constituents: Eugenol, methyleugenol, carvacrol, carophylline, monoterpenes, sesquiterpenes & phenolic compounds.

Parts used: Entire herb (leaves, stem, root, seeds)

Uses:-

1. Anti-inflammatory, antimicrobial, and antioxidant.
2. Used for respiratory disorders, fever, skin diseases, and digestive issues.
3. Acts as a natural stress reliever & mood booster.

4. Reduces dandruff, itching & strengthens hair.



❖ COCONUT OIL:

- **Synonym:** Cocos oil, Nariyalkatel, Copra oil
- **Family:** Areaceae (also known as Palmaceae)
- **Biological source:** Coconut oil is obtained from the dried kernel (copra) of the Coconut palm *Cocos nucifera*
- **Geographical Source:** Coconut oil is primarily produced in tropical countries, including:-
Philippines, Indonesia, India, Sri Lanka, Thailand.
- **Chemical constituents:** Triglycerides of saturated fatty acids, mainly:- Lauric acid (about 45–52%), Myristic acid, Palmitic acid, Capric acid, Caprylic acid, Stearic acid
- **Uses:-** 1. Cosmetic: Moisturizer, hair oil, and skin conditioner.
2. Food: Cooking oil, especially in tropical regions.



❖ OLIVEOIL:

- **Synonyms:** Oleaeuropaeaoil, Europeanoliveoil, Sweet oil
- **Family:** Oleaceae (Olivefamily)
- **Biological Source :** The fixed oil obtained from the fruit (drupe) of the olive tree, olea europaea .
- **Geographical Source :** Mediterranean region (e.g., Italy, Greece, Spain) Other regions with suitable climate (e.g., California, Australia)
- **Chemical Constituents :** Monounsaturated fatty acids: Oleic acid (C18:1) Polyphenols: Hydroxytyrosol, tyrosol, oleuropein Other compounds: Squalene, tocopherols
- **Uses:**
Culinary: Cooking oil, salad dressings, marinades.
Pharmaceutical: Carrier oil, solvent for medicinal preparations.



❖ PALM OIL:

- **Synonyms:** Palmkernel oil (from kernel) Palm fruit oil (from fruit pulp)
- **Family:** Arecaceae (Palm family)
- **Biological Source :** *Elaeis guineensis* (Oil palm) The fruit of oil palm tree, *elaeis guineensis*, specifically the fleshy mesocarp of the fruit.
- **Geographical Source :** Tropical regions (e.g., Malaysia, Indonesia, Africa)
- **Chemical Constituents :** Saturated fatty acids: Palmitic acid (C16:0)
Monounsaturated fatty acids: Oleic acid (C18:1) Other compounds: Carotenoids, tocopherols, tocotrienols
- **Uses:**
 1. Food industry: Cooking oil, food additive, ingredient in processed foods.
 2. Cosmetic industry: Soap making, skincare products, hair care products.



❖ CASTOROIL:

- **Synonyms:** Ricinus oil, Castor bean oil
- **Family:** Euphorbiaceae (Spurge family)
- **Biological Source :** Ricinus communis (Castor bean plant) the seeds of the ricinus communis plant, also known as the castor oil plant or castor bean.
- **Geographical Source :** Tropical and subtropical regions (e.g., India, Africa, Brazil)
- **Chemical Constituents :** Ricinoleic acid: A monounsaturated fatty acid (C18:1) responsible for its unique properties, Other compounds: Oleic acid, linoleic acid, ricin (a toxic protein)
- **Uses:**
 1. Laxative: Stimulates bowel movements and relieves constipation.
 2. Skincare: Moisturizing and anti-inflammatory properties.



❖ ROLE OF INGREDIENT:

1. Neem Oil / Neem Extract :- Antibacterial, antifungal, and skin-soothing agent Details: Neem is the key ingredient known for treating acne, eczema, and other skin infections. It helps cleanse skin deeply and reduce inflammation.

2. Coconut Oil:- Cleansing and lathering agent Details: Provides rich lather and has antimicrobial properties. It also helps to harden the soap.

3. Olive Oil:- Moisturizing and conditioning Details: Gentle on the skin and helps make the soap more moisturizing. It also contributes to a smooth texture.

4. Palm Oil (optional):- Hardness and stability Details: Adds hardness to the soap and creates a stable lather. Sometimes replaced with sustainable alternatives due to environmental concerns.

5. Castor Oil- Lather booster and moisturizer

Details: Enhances creamylather and helps condition the skin.

6. Lye (Sodium Hydroxide):- Saponification agent

Details: Reacts with oils in a chemical process (saponification) to create soap. No lye remains in the final product if properly made.

7. Water:- Solvent for lye

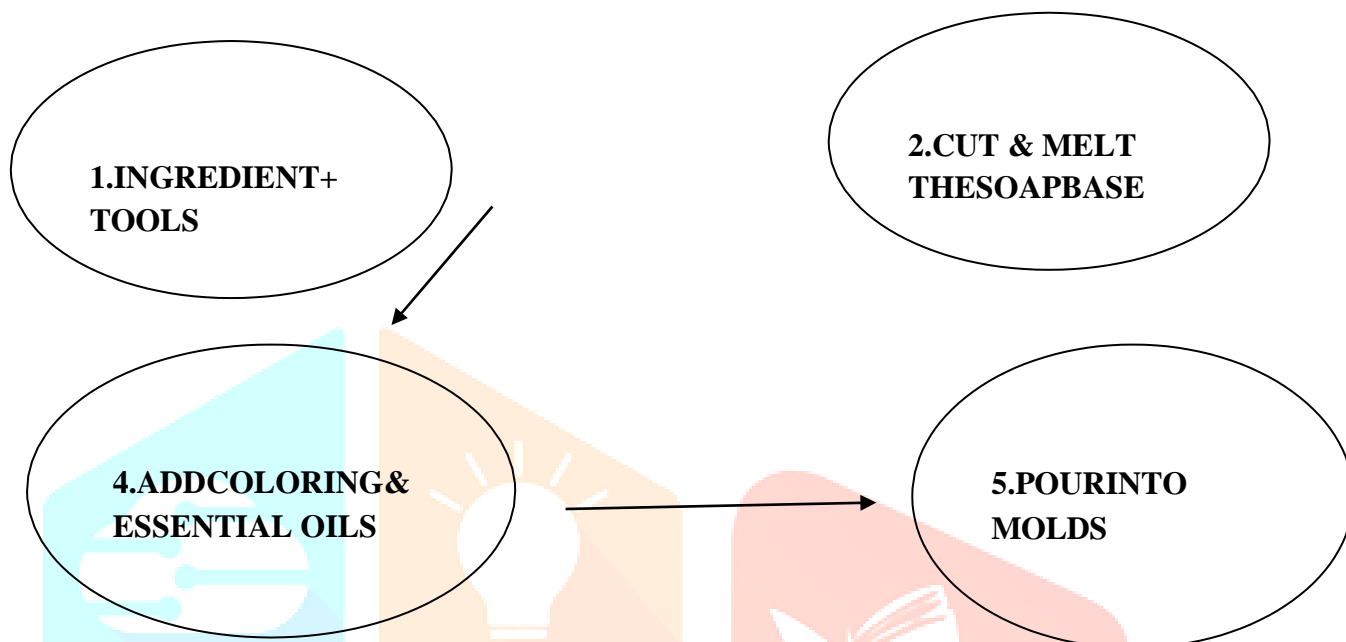
Details: Used to dissolve lye and allow it to react with oils. Also helps blend ingredients.

8. Essential Oils (e.g., Eucalyptus):- Fragrance and therapeutic benefits

Details: Add natural scent and can enhance the soap's skin benefits, such as antimicrobial or calming effects.



❖ STEPS INVOLVED IN PREPARATION OF NEEM SOAP:



❖ PROCEDURE:

1. **Make the Lye Solution:** - Measure 130g lye. Slowly add the lye to 300ml distilled water (stir gently as it heats up). Let the lye solution cool to around 38–43°C (100–110°F).
2. **Measure and Mix Oils:** - Weigh and combine neem oil, coconut oil, olive oil, and castor oil in a pot. Heat gently until melted and uniform. Let the oil mixture cool to the same range as the lye solution (38–43°C).
3. **Combine Lye and Oils:** - Slowly pour the lye solution into the oil mixture. Use a stick blender to mix until “trace” is reached (mixture thickens like pudding).
4. **Add Extras:** - Mix in neem powder, neem extract, or essential oils at trace. Stir well to distribute evenly.
6. **Pour into Molds:** - Pour the soap mixture into molds. Tap gently to remove air bubbles.
7. **Insulate and Cure:** - Cover with a towel or plastic wrap and let sit for 24–48 hours. Unmold the soap and cut into bars if necessary. Cure in a dry, ventilated space for 4–6 weeks.



❖ FORMULA :-

The formulashownintableis bestsuitedfor thepreparationofherbalssoap-

Sr.no	Ingredients	Quantity
1	Neemoil	100 (ml)
2	Reetha	30(gm)
3	Tulasioil	50(ml)
4	Cocontoil	50(ml)
5	Esentialoil	16(ml)
6	Oliveoil	330(ml)
7	Palmoil	200(ml)
8	Castoroil	104 (ml)
9	Lye(sodiumhydroxide)	150(gm)
10	Distilledwater	380(ml)

❖ HOWTOUSENEEM SOAP:

- Moisturizingdryskin: Youcanhydrateyour skinnaturallyifyoufaceexcessive dryness.
- Formulateaneempastewithturmericpowderandcoconutoil, ar applyittoyourface.
- Washitafter sometimeandapplyafacemoisturizer.
- Oneofthemainbenefitsofaneemsoapforourskinisitsmagicantibacterialand antimicrobial properties that fights acne and pimple related problems.
- When we apply neem soap or cleanseron our face,itimmediately acts upon itand any bacteria in the clogged pores and drains acne.

❖ BENEFITSOFTNEEM SOAP:-

Neem soap is a natural skincare product made using extracts from the neem tree (*Azadirachta indica*), a plant known for its powerful medicinal properties in traditional Indian medicine (Ayurveda). Here's a detailed overview of its uses and benefits:

1. Antibacterialand AntifungalProperties

Use:Helpstreatandpreventskin infections.

Details: Neemcontainscompounds like nimbin and nimbidin, whichare effective against bacteria (like *Staphylococcus aureus*) and fungi (like *Candida albicans*). Regular use can reduce body odor, athlete's foot, and ringworm.

2. AcneTreatment

Use:Reducespimplesandblackheads.

Details: Its antibacterial properties help kill acne-causing bacteria, while its anti-inflammatory effects reduce redness and swelling. It also helps unclog pores and reduce oil production.

3. SoothesSkinConditions

Use:Relievevssymptomsofeczema,psoriasis, and dermatitis.

Details: Neem soap calms irritated skin, reduces itching, and heals damaged skin. It can help manage flare-ups with regular use.

4. MoisturizesDrySkin

Use:Hydratesandsoftenstheskin.

Details: Neem oil, a common ingredient in the soap, is rich in fatty acids andvitamin E, which nourish and lock moisture into the skin.

5. Anti-AgingEffects

Use: Reduces signs of aging.

Details: Its antioxidant content helps combat free radicals, reducing the appearance of fine lines, wrinkles, and age spots over time.

6. Scalp and Hair Benefits (when used as shampoo or soap)

Use: Treats dandruff and promotes healthy scalp.

Details: Neem soap can be used to cleanse the scalp, reducing itchiness, flakiness, and scalp infections.



❖ ADVANTAGES OF NEEM SOAP :-

- 1. Antibacterial and Antifungal:** Fights skin infections like acne, eczema, and ringworm.
- 2. Treats Acne and Pimples:** Clears clogged pores and reduces inflammation.
- 3. Soothes Irritated Skin:** Relieves itching, redness, and inflammation from conditions like psoriasis.
- 4. Moisturizing:** Nourishes the skin without drying it out.
- 5. Heals Wounds and Scars:** Promotes faster healing and reduces scar appearance.
- 6. Anti-Aging:** Fights free radicals, reducing wrinkles and fine lines.
- 7. Natural and Chemical-Free:** Gentle on sensitive skin and safe for daily use.
- 8. Eco-Friendly:** Biodegradable and free from harmful chemicals.



❖ DISADVANTAGES OF NEEM SOAP:-

1. Allergic Reactions:-

Cause: Some individuals may be allergic to neem oil or its components (such as azadirachtin).

Effect: Redness, rash, itching, or swelling after use. In severe cases, hives or eczema may develop.

Tip: Always do a patch test before using neem soap extensively.

2. Strong Odor:-

Cause: Neem has a naturally strong, bitter smell that many find unpleasant.

Effect: This can be off-putting for regular use, especially in social or professional environments.

Tip: Some commercial neem soaps blend in essential oils to mask the smell, but they may not eliminate it completely.

3. Overuse Can Disturb Skin Microbiome:-

Cause: Its potent antimicrobial properties may not discriminate between harmful and beneficial microbes.

Effect: Disruption of the skin's natural microbiome balance may lead to skin issues in the long term.

Tip: Use neem soap selectively rather than as a daily cleanser unless needed for specific conditions like acne or infections.

4. Potential Staining:-

Cause: Neem oil has a dark greenish-brown color.

Effect: It can sometimes stain white washcloths, bathroom surfaces, or light-colored clothing.

Tip: Rinse well and be cautious with fabrics and surfaces.



❖ **PRECAUTION OF NEEM SOAP:-****1. Patch Test Before Use:-**

Why: Neem can cause allergic reactions in some individuals.

How: Apply a small amount of neem soap on the inside of your wrist or elbow. Wait 24 hours. If redness, itching, or irritation occurs, discontinue use.

2. Avoid Eye Contact:-

Why: Neem soap can be irritating to the eyes.

Precaution: Rinse immediately with clean water if soap enters the eyes.

3. Not Suitable for All Skin Types:-

Dry or Sensitive Skin: Neem has astringent properties which might dry out or irritate sensitive skin.

Tip: Choose a neem soap with moisturizing ingredients like glycerin, coconut oil, or aloe vera if you have dry or sensitive skin.

4. Limit Use in Children:-

Why: The skin of babies and young children is more sensitive.

Advice: Consult a pediatrician before using neem products on children under 12 years old.

5. Avoid Internal Use:-

Important: Neem soap is for external use only. Ingestion can lead to serious side effects, including vomiting, drowsiness, and in rare cases, neurological issues.

❖ **RESULT:-**

- The neem soap was formulated by admixing the equal amount of the adequate extract all ingredient with neem. (As per formula table).
- The above plant extract contains neem which is an antibacterial agent
- An ideal soap must have solid shape and foaming ability. Thereetha power behaves as a foaming agent. Reetha added to shampoo serves as anti-bacterial activity.
- neem extract added to shampoo serves as a preservative and anti-bacterial agent in soap
- Reetha serves as a foaming agent. Tulsi serves as antibacterial.

S.N	Parameter	Findings
1	Colour	Yellowish green
2	Odor	Characteristics

3	Shape	Squareshape
3	pH	7
4	Foamability	Yes
5	Foam type	Compact ,dense&uniform
6	Foamvolume	4ml
7	Foamstability	5min
8	Skinirritation	Non irritant

The above given table describes the colour, odour, shape, pH, irritation, foamability and foam stability of the prepared herbal soap. The colour of formulation was yellowish green. The odour of formulation was characteristic. The shape was oval. As per evaluation test pH of formulation was 7 which is likely skin pH and there is no irritation.

❖ CONCLUSION:

- Neem soap stands out as a powerful natural skincare solution due to the remarkable medicinal properties of neem (*Azadirachta indica*). Its rich content of antibacterial, antifungal, and anti-inflammatory compounds .
- neem soap is a sustainable and eco-friendly alternative to synthetic soaps. It is often free fromartificialfragrances, parabens, and sulfates, making it safe for dailyuse and suitable for individuals with sensitive skin or allergies.
- neem soap offers a holistic approach to skincare, blending traditional herbal knowledge with modern health-conscious values. It supports healthy, clear skin while aligning with the growing demand for natural, cruelty-free, and environmentally responsible personal care products.
- The plant *Azadiricta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi* and *Acacia concinna* were extractedusing waterand subjected to variousevaluationtest according to previous research the antimicrobial activity of Neem was studied
- Theherbalsoapismucheffectivethanachemicalsoapanddoesn'thaveanyside effects.

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