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Formulation and Evaluation of Herbal Soap Using Medicinal Plant

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Abstract- Herbal soap is a natural skin-care product made from plant-based ingredients such as neem, tulsi, turmeric, aloe vera, tomato, beetroot, apricot, coconut oil, eucalyptus oil, vitamin E, and glycerin. Unlike many commercial soaps that contain synthetic chemicals, herbal soap uses natural materials that are gentle on the skin. It helps cleanse the skin without causing dryness or irritation. The soap was prepared by melting the glycerin base, mixing it with herbal extracts and oils, and then pouring the mixture into molds for cooling and solidification. The finished soap was dark brown in color, had a pleasant mild fragrance, and produced a satisfactory amount of foam. Its pH ranged from 7.0 to 7.3, making it suitable for regular skin use. The soap showed good stability, retained moisture, and did not cause redness or discomfort. Overall, it is a safe, eco-friendly, and effective herbal cleansing product.

Keywords: Herbal Soap; Neem; Tulsi; Aloe Vera; Coconut Oil.

I. INTRODUCTION

Out of green life spring some cleansers, made from plant oils, colors drawn from stems, petals, soil-fed parts. While common bars often hold fake scents, strong wash chemicals, things built in labs, these instead lean on what the ground provides. Gentle washing takes place. Moisture stays put in skin. Irritation usually fades. With use, a protective layer builds up. These days, folks notice fake skincare stuff can wreck skin - and mess up nature too. That realisation sparked something different. Interest began swirling around clean, green alternatives. Scientists got curious, then went deep. Factories shifted their flow. New blends showed up - gentler, simpler, pulled more from soil than labs [1].

Soap came first, long before modern cleaners arrived. Animal fat or plants give the foundation, mixed with an alkali - that mix makes soap and also spills out glycerin. Coconut lifts foam fast; olive soothes; castor grabs moisture, one after another doing their work. Neem eases redness, almond smooths cracks, each applied with quiet intent. Instead of lab-made aids, older ways draw power from leaf, root, bark, sometimes even flower. Some bars shift the goal slightly - not focused on cleaning deep, but offering quiet care to skin. Moisture sticks around thanks to glycerin, holding water in place like roots hold soil. Botanicals do more than scent; they bring resilience, texture, gentle touch. Old knowledge shapes how each batch comes together, yet shape shifts depending on what grows now. The result speaks softly, made for daily use, shaped over time, unconcerned with being novel

Figure 1: Herbal Soap

Out of old villages came quiet knowledge, passed hand to hand. Sun-soaked leaves took the place of lab-made pastes long ago. When spots show up, neem leaps in - quick and sharp against unseen invaders. This one grows wild near temple paths, its juice known by name for ages. Not far behind, turmeric moves quietly, easing redness, standing guard within tissue. Golden goo guards while it fixes.

Before store-bought jars, plants from earth gave what was needed. Aloe creeps in calm, cool and even on hot spots. Moisture stays put without grease, much like morning drops warming under rays. Scent slips through, rose touching air like fingers on cloth. Out of nowhere, shade slips in - sandalwood taking root where irritation burned. Down comes the smell, lavender winding through corners, pressing softly on frayed edges. Quiet holds power here, unshouted but steady. A sudden edge cuts air - tea tree stepping forward, bright and sharp - then it slows, sinking cautious into lower layers. Openings widen without force, cleaned by what bites gently while soothing. Smells of earth come up, true, yet reason goes past scent. With every leaf, through every drop, change returns - bit by bit, once more [3].

A few people find their skin feels better with plant-made bars since harsh stuff that stings is left out. Without fake bubbles, made-up smells, or hard-to-remove extras, the gentle ones handle skin more softly. Instead of washing away what keeps things moist, these ground-down recipes keep harmony alive beneath the surface. Quiet strength builds loyalty - particularly for sensitive types - turning them toward leafy washes instead of the usual plastic jugs sitting in shower corners [4].

One herb at a time, chosen by hand, goes in without rush - each shift measured only after it blends. Thickness shapes slowly, shaped drop after drop, never forced. When balance leans too far, small splits form despite steady hold. Moisture lingers just below wet, nowhere near the brittle snap of old leaves gone dry. Out of stillness, bubbles rise gently, carrying dirt away on silent lifts. When jars rest too long, changes creep in - barely noticed until sun hits the surface. Smell hints at peace beneath glass walls, where green things hold steady despite heat pressing close. Usually, mixing cold wins since warmth drains life from roots well ahead of time.

These days, more people everywhere choose plant-based skincare. Driven by interest in kinder, nature-rooted self-care, the shift keeps growing. Worry over what touches the body runs deep - so does care for trees, rivers, wild life. Testing creams on caged animals feels harder to accept now. These days, folks tend to think of them as old news. As plant-made soap flows off, it vanishes gently, barely leaving a mark on soil or stream. Store brands spill harsh stuff into ecosystems; greener options, though, usually pass through without harm. Growing plants that renew yearly lets factories work alongside nature's rhythm - no force needed [6].

Out of leaf and root, soap takes shape - quiet, solid, doing two jobs at once. Cleaning happens, yes, yet shifts occur behind the scenes: tweaks here make it last, others ease rough patches, some glide better across skin. Every so often, new green bits join in - each one studied first, never rushed into place. When breakouts appear, specific blends move forward; if redness stays too long, another set steps in softly. Form follows field and forest, while also listening close to how skin answers back [7].

Many choose herbal soap just because it cleans well without costing much or harming nature. Yet instead of drying out skin like others, this gently calms common irritations day by day. From crushed botanicals or steeped herbs, each bar works with care, never burning. Honesty shows clearly since no lab-made chemicals hide inside. Still today, need stays high - producers keep returning to it, time after time [8].

TYPES OF SOAP

Table 1. Classification and Characteristics of Different

Sr.No	Types Of Soap	Discription
1	Toilet Soap	Soap you use in the bathroom works every day when you wash your hands or take a bath. Dirt, sweat, oil - gone, thanks to its cleaning power. Skin stays clear, feeling light afterward. Freshness sticks around without trying too hard.

2	Herbal Soap	From plants come soaps laced with herbal goodness, drawing on leaves, roots, and fragrant essences. These wash away dirt while shielding skin - fending off breakouts, tightness, rough patches.
3	Medicated Soap	Some soaps come with medicine inside them, working against issues such as acne or rashes. These cleansers fight off fungus while calming irritated spots. Instead of regular bars, they target germs that cause discomfort. Irritation fades when used properly over time. Bacteria struggle to survive on treated skin.
4	Beauty Soap	Moisturizers sit inside beauty soap, along with fragrances that linger lightly on the skin. Because of added conditioning elements, texture tends to feel smoother after use. Softness becomes noticeable quite fast. A gentle radiance shows up over time. Appearance shifts subtly, almost without warning.
5	Transparent Soap	Starting off with glycerine and alcohol gives transparent soap its see-through look. Because of how it feels light on the body, many find it kind to touch. Softness sticks around longer when using this type, thanks to moisture held close. Alcohol blends right into the mix, making clarity possible without harsh results.
6	Liquid Soap	Soap that flows like water cleans hands along with skin. Simple to apply, stays clean, found in houses, clinics, spaces where people gather. People reach for it every day without thinking twice.
7	Laundry Soap	From time to time, a bar of laundry soap hits the washboard ready to tackle fabric grime. Not just water - this cleaner lifts stubborn marks because its mix digs deep into fibers.
8	Baby Soap	Soap for babies feels soft on their delicate skin. Made just for tiny bodies, it skips the stinging. Irritation rarely shows up when using this kind.
9	Antibacterial Soap	Soap that fights germs can lower the number of bad microbes on your hands while improving cleanliness over time. Still, results depend on how it's used each day.
10	Glycerin Soap	Glycerin inside the soap holds water close to your skin when you wash. This keeps surfaces from feeling tight or rough afterward.

Characteristics of Soap:-

Before today's cleaners existed, people used soap on hands, face, clothes, all of it. When heat mixes oil with lye, a shift happens - soap forms, while glycerine slips out too. Bars seem alike but differ below - the touch, the pH, how foam builds up. Scrubbing removes dirt, sure, yet what matters also is how skin feels after water washes away. Here's the thing - staying put matters just as much as showing up. Some vanish fast, others stick through thick and thin. What people feel often skips past surface stuff like scent or shine, digs deeper into what's hidden below [9].

Liquid slips where water won't, tugging grime loose. One moment it grips grease, next it hugs wetness like an old friend showing up uninvited. Bubbles bloom - each one clutching gunk in a soapy fist. As suds crawl over skin, they drag microbes out the back door while sweat packs its bags. Where droplets usually bounce off stubborn messes, this mix whispers give in and dissolves the standoff. Off they drift when rinsed, those little beads slipping away clean. A solid bar works deep yet stays gentle - skin feels smooth after, never stretched or sore [10].

Figure 2. Herbal Ingredients Used in Formulation

Lather matters most when soap meets water. A good bar whips up thick bubbles fast. Foaming lifts grime off skin while smoothing each wash. Ingredients shift results - coconut oil boosts suds, olive oil stretches their life. Fats picked change how big the bubbles grow, how long they stay around [11].

Water resistance often defines a good bar. Not collapsing quickly when wet means smoother handling during use. Coconut oil might harden it more than olive would - drying duration also plays its part. Proper balance here extends storage life noticeably. Touch reveals what tests cannot: real-world performance matters most [12].Smooth skin likes products that follow its own rhythm. Though soap makers favor alkaline parts, these lift pH beyond gentle zones. When levels rise, redness or itch may appear without warning. Staying calm means avoiding extremes on both ends of the scale. Close to center is where protection grows best [13].

Water sticks around better thanks to glycerin-heavy bars that hug it near the skin. From time to time, lotions built on green ingredients deliver softness without harsh steps. Nature's oils step in where dryness tries to settle, blocking splits before they start. Instead of sharp chemicals, mild herb mixes pass nutrients through the skin like quiet messengers. Locked-in hydration shows up most when recipes lean into earth-sourced pieces [14].

Some folks size up soap first by its look, then its smell. Eye appeal often comes from soft hues, yet comfort ties closely to a quiet fragrance. Texture plays a role - so does keeping shape, free of cracks or uneven spots. Rather than lab-made scents, plenty of natural bars use extracts from leaves and flowers. Those botanicals aren't only for scent - they might energize alertness or calm irritation [15].

Some bars keep their shape well when handled properly. Yet moisture loss can begin slowly, driven by damp air. Their form stays strongest where it's cool and dry, protected from sun rays. As oils degrade over time, scent weakens sooner than expected. Most times a weird color means the recipe missed its mark. Drying out too much? That is when splits show up across the surface. Spoiled oils bring sharp smells that cut through the taste. What something is made of decides its lifespan on the shelf. Only after weeks do weak blends start to fail [16].

Over time, soap fades away on its own. Since ingredients like olive or coconut oil are common, the earth processes them without trouble. Rivers and dirt don't get overloaded because these aren't synthetic chemicals made in labs. A hint of plant extract might bring fragrance or hue - still, what remains is barely noticeable [17].

Figure 3 :- Overview of Herbal Soap and Its Components

Soap seems simple, but most never think about what's inside. Its makeup shapes how well it works,

whether it irritates skin, feels gentle, fits into everyday routines. When made with attention, washing turns smooth, just right, without any second thoughts afterward [18].

Long ago, folks scrubbed with bars born from oil mixed with lye. When warmth hits, the mix shifts - bubbles rise but glycerin stays put. Tiny details set every piece apart: how it glides, foams, its acid level. What it does goes beyond grime lift - it shows up later, seen in quiet skin once washed. What sticks around counts a lot too. While some fade fast, it's the hidden layer that holds weight - never the outer look or smell [19].

Water usually runs right over unclean skin. Yet soap grabs hold of oily layers before anything else. After gripping fat, it pulls away damp residue - microbes follow without delay. Little spheres trap grime as if sealing traps slowly. Weight builds inside those droplets, pulling filth toward drain openings. Water sticks to itself, skips right past dirt. Yet soap slips in, changes how things connect. The bar resting by your sink works slow, thorough. Afterward, skin reads clear - balanced. No sting lingers [20].

Soap wakes up when water hits it. Quickly now, a hard bar turns into thick foam filling palms completely. Dirt lifts out - caught in tiny air sacks carried off by flowing wetness. Ingredients such as crushed plant oils or melted animal fats, sometimes mixed with added bits, decide just how big the pile grows and how slowly it fades back to nothing [21].

Water resistance often improves if the bar melts slowly. Halfway through a shower, performance really shows. Firmness sometimes comes easier with coconut instead of olive oil - but that changes per recipe. Drying one more day helps it hold together better. Most of the time, staying balanced keeps things fresh much longer. Waiting a bit before sealing changes how heavy it seems. Once rinsed, fingers slide more, shifting grip entirely. By nightfall or early light, touch slowly brings back form [22].

Most comfort happens when skin touches what it knows well. Soap tends to carry alkaline stuff, so pH changes - no asking needed. Too high, and trouble comes: red spots, a pulled feeling show up. Balance stays by avoiding extremes, never forcing one direction or another. Safety hides in middle zones, boring but true [23].

Water sticks around when plants handle the cleaning job. Thanks to glycerin inside each bar, dampness clings right where you need it. Cracks in skin soften better with natural oils running their course. Quiet strength comes through herbs that feed without rushing. Deep wetness follows wherever those pieces show up [24].

Looks come first for most when picking soap. Not color alone, but softness in tone pulls attention longer than brightness does. Near enough to sniff, then scents speak - like wet stone after rain or linen hung outside. Texture changes everything though; roughness on skin makes even sweet promises feel hollow fast. Flowing lines happen when liquid moves without stopping, edges stay whole like water-worn rock. Plant oils pressed today build scents that breathe like leaves after rain rather than sharp lab-made fumes. Born from roots and leafy shoots, they stir into motion once touched by warmth. More than odor alone, they lift attention or calm raw spots [25].

Moisture loss slows if kept properly. Because humidity steals water, shifts take time to show. Better shape stays longer somewhere cold and dry - sunlight quietly ruins feel over weeks. Once oil quality drops, smell weakens quicker. Wrong colors pop up when blends fail. Drying too slow leads to splits forming. Rancid hints hang around after oils turn bad. The strength of a mixture decides its lifespan. Only time - days passing - reveals what joined elements were really worth [26].

Slowly, soap fades away - no leftovers behind. From olive oil or coconut oil it begins, drifting through the wild like water slipping between branches. Rivers breathe easier because of it; dirt stays loose, never clogged. Hints of color might come from crushed herbs, maybe bark, but those too disappear well before [27] shows up. Long after scent is gone, still nothing lingers.

Most people forget soap exists until it stings or dries out skin. Hidden ingredients shape whether it soothes or irritates upon touch. When made well, each bar pulls grime away yet keeps helpful hydration intact. Some formulas calm irritation; others trigger redness that shows up unannounced. Peaceful routines rely more on choice than chance alone. Most folks miss whether something slots into daily life, yet that matters far more than ads let on. Working smoothly? That kind of blend just fades away - quiet, unseen, only showing results when done [28]

Advantages And Disadvantages

Table 2. Advantages and Limitations of Herbal Soap

Sr.No.	Advantages of Soap	Disadvantages of Soap
1	Provides effective cleansing of dirt, oil, and impurities	Excessive use may cause skin dryness
2	Helps maintain personal hygiene and sanitation	Some soaps may cause skin irritation or allergies
3	Prevents microbial and skin infections	High alkaline pH can damage sensitive skin
4	Produces good foam and refreshing effect	Chemical soaps may contain harmful synthetic additives
5	Available in different formulations for various skin types	Hard water reduces soap efficiency
6	Biodegradable and environmentally friendly in case of herbal soaps	Frequent use may disturb natural skin oils

II. LITERATURE REVIEW

1. Kirtikar u et al. (2005) :-

Kirtikar, K.R.,and Basu,B.D. (2005) reported that Neem (Azadirachta indica) possesses antibacterial, antifungal, and anti-inflammatory properties. The authors concluded that neem extracts are effective in preventing skin infections and maintaining skin hygiene.

2. Pandey and Madhuri et al. (2010) :-

Pandey,G., and Madhuri, S.(2010) studied the medicinal properties of Tulsi (Ocimum sanctum)and found significant antimicrobial and antioxidant activities. The researchers suggested that Tulsi helps protect the skin from microbial contamination and oxidative stress.

3. Ammon and Wahl et al. (1991) :-

Ammon, H.P.T., and Wahl, M.A. (1991) investigated the pharmacological properties of Turmeric (Curcuma longa) and reported strong anti-inflammatory and antioxidant activities due to curcumin. The study concluded that turmeric promotes healthy skin and supports wound healing.

4. Surjusheet al. (2008) :-

Surjushe,A.,Vasani,R., and Saple, D.G. (2008) reviewed the therapeutic applications of Aloe Vera andreporteditsmoisturizing and skin-healing properties. The researchers concluded that Aloe Veraimprovesskin hydration and regeneration.

5. Rao andAgarwalet al. (2000) :-

Rao, A.V.,andAgarwal,S. (2000) studied Lycopene present in Tomato (Solanum lycopersicum) and foundpowerfulantioxidant activity. The authors reported that tomato extracts protect skin cells fromoxidativedamage and improve skin appearance.

6. Clifford et al. (2015) :-

Clifford, T., Howatson, G., West, D.J., and Stevenson, E.J. (2015) investigated the biological activities of Beetroot (Beta vulgaris) and reported significant antioxidant properties. The study concluded that

beetroot helps protect skin cells from free radical damage.

7. Leccese et al. (2011) :-
Leccese, A., Bartolini, S., and Viti, R. (2011) evaluated the nutritional composition of Apricot (Prunus armeniaca) and reported the presence of vitamins and essential fatty acids beneficial for skin nourishment and hydration.

8. Bakkali et al. (2008) :-
Bakkali, F., Averbeck, S., Averbeck, D., and Idaomar, M. (2008) studied the biological effects of Eucalyptus oil and reported significant antimicrobial and antiseptic activities that support its use in cosmetic formulations.

9. Nevin and Rajamohan (2010) :-
Nevin, K.G., and Rajamohan, T. (2010) evaluated the dermatological benefits of Coconut oil and concluded that it improves skin hydration, enhances cleansing action, and provides protection against skin dryness.

10. Thiele et al. (2001) :-
Thiele,J.J., Hsieh, S.N., and Ekanayake-Mudiyanselage, S. (2001) reported that Vitamin E functions as a powerful antioxidant and protects skin cells from free radical damage. The study highlighted its role in improving skin health and cosmetic stability.

11. N., Saberi, Z., and Amini, S. (2011) :-
investigated the medicinal properties of Rose water and found that it possesses soothing, cooling, and anti-inflammatory effects beneficial for skin care products.

12. Chavan et al. (2021) :-
Chavan,A., Patankar, R., and More, S. (2021) formulated and evaluated a poly-herbal soap and reported satisfactory pH, foamability, stability, and antimicrobial activity. The researchers concluded that herbal soaps are effective alternatives to synthetic soaps.

13. Arora et al. (2012) :-
Arora,R., Gupta,A., and Sharma, P. (2012) studied herbal cosmetic formulations and reported that poly-herbal products provide better skin protection due to the combined action of multiple medicinal plants. The researchers concluded that herbal soaps offer enhanced antimicrobial and antioxidant effects with minimal side effects.

14. Singh and Verma (2014) :-
Singh, N., andVerma, R.(2014) investigated the antibacterial activity of herbal soaps and observed significant inhibition against common skin pathogens. The study concluded that herbal ingredients can effectively reduce microbial contamination and improve skin hygiene.

15. Kumar et al. (2016) :-
Kumar, S.,Patel, M., andShah, D. (2016) evaluated the physicochemical properties of herbal soap formulations and reported acceptable pH, foam retention, hardness, and stability. The authors concluded that herbal soaps can meet standard quality requirements while providing therapeutic benefits.

16. Mishra and Dubey (2018) :-
Mishra, P., andDubey, A.(2018) studied the antioxidant potential of herbal cosmetic products and found that natural plant extracts help protect skin cells from oxidative damage. Their research suggested that antioxidant-rich herbal soaps support healthy and youthful skin.

17. More, S. (2021) :-
formulated and evaluated a poly-herbal soap containing medicinal plant extracts. The study reported satisfactory foamability, cleansing action, stability, and consumer acceptability. The researchers concluded that poly-herbal soaps are safe, effective, and suitable alternatives to synthetic soaps.

III. AIMS AND OBJECTIVE

Aim :- Evalution and Formulation of Herbal soap by using Medicinal Plant

Objective :-

- Start with natural oils mixed with plant extracts. In step two, add helpers to keep things steady. A slow stir brings smoothness - keep going till it feels right. Shape only after thickness shows up. Let it set fully before any use [29].
- Soft beginning, never harsh - that's what sets kind soap apart. Yet it won't steal moisture meant for your skin. Rough ingredients usually dominate most formulas. This time, milder ones take center stage. So what happens when they're at work? Open fresh, though soft at touch. Smoothness matters more than strength ever could. Movement grows where parts connect without pressure. Each step comes naturally, similar to air during quiet seconds. Tension fades once balance leads forward [30].
- Plants that heal arrive early, picked because they keep microbes away while calming irritated surfaces. Locking in hydration happens through mild botanicals - these guard delicate zones minus any rough impact. Some selections dial down oxidative strain, bringing balance back to key spots. Soft support comes from quiet performers inside the mix, easing soreness and guiding tissue renewal. Each plays a role behind the curtain, strengthening and softening simply by being there [31].
- Out of the lab, into the garden – that is where some turn now. Not relying on synthetic mixes anymore, they choose green things grown in earth. Shifting away from harsh ingredients brings quiet differences over time. Instead of manufactured formulas, crushed herbs find their way onto skin. Little by little, a different rhythm appears, guided by what roots offer [32].
- Something solid fills the palm first - cold metal, smooth edges. Pressure tests firmness, fingers sinking just enough to feel pushback. Bubbles appear later, sometimes quick, sometimes slow, building in uneven waves. After rinsing, numbers show up, faint digits on paper strips revealing what the skin might know already. Days pass before changes speak: colors dull, smells thin out, lines split across the top like dried earth. Something shifts when the surface tingles - reaction strength hints at calm or storm. Bubbles rise not by chance but through mixtures tested ahead of time A different start means making a cleaner that fades away on its own [33,34].
- Under your touch - alive, firm - it's roots at work, leaves doing their part, time shaping it all. Herbs spark life in skin, fueling strength while lifting energy. Green hands tend to you, offering gentle hold that holds back dullness. Not chemicals stirred in rooms with lights, but earth's quiet helpers stand watch. Without rush, without sound, change happens where living things grow [35].
- To study the process of saponification and formulation techniques involved in soap preparation [36].
- Quiet hands begin, forming every ingredient step by step. Light at dawn touches face - this is how the cream feels: smooth, clean, nothing heavy. When plants are mixed well, patience matters more than speed, attention grows stronger when rushed less. Value shows only after time, kindness builds trust that lasts [37].
- One day, jars begin showing up by the sink - roots and leaves tucked into glass. Change creeps in when someone notices fewer red patches on their arms. [38]

Figure 5 :-Benefits and Therapeutic Applications of Herbal Soap

IV. PLAN OF WORK

Start by looking into how herbs work in cleansing bars. Study what goes into making natural soaps, plus explore how different plants affect skin health. One step leads to gathering everything needed - oils, botanicals, tools. Instead of rushing, take time to prepare herbal infusions carefully. These extracts blend slowly into the base, forming a smooth mix. After pouring and cooling, each batch gets checked for quality. Take neem as an example - it shows up not because it's traditional, but because it supports clear skin. Choices come down to real results, never

just habit. From tulsi comes a long list of known benefits. Not just bright but kind on skin too, that is why turmeric joins in. Calmness matters - so aloe vera slips right through. The mix pulls in tomato, then beetroot trails close behind. Even apricot kernels get a place inside. Pouring in rose water kicks things off, then eucalyptus oil slips in after. Coconut oil steps into the spotlight halfway through, its presence shaping much of what comes next. Near the finish line, vitamin E makes a quiet entrance, blending in without fuss.Once the ingredients are picked, every needed material, chemical, and lab tool gets gathered. Starting with fresh plants, they're washed, broken down, soaked, or strained to pull out useful parts. A gentle heat method warms the glycerin base until liquid, followed by mixing in the herbal liquids along with extras, stirred steadily till smooth.

Once cooled, the molded soap sits until firm. Dried bars get checked one by one - color first, then smell, form, how they lather, their feel, acidity level, and if they hold up over time. Notes pile up as each trait gets reviewed. Thoughts on what worked, what didn't, take shape slowly. The final summary takes form near the end.

Figure 6 :-Research Methodology and Work Plan for Herbal Soap Development

Flow Chart 1:- Flow Diagram of Herbal Soap Formulation Process

Literature Review
↓
Selecting Herbal Ingredients
↓
Materials and Equipment Collection
↓
Herbal Extracts Preparation and Melting Glycerine Soap Base
↓
Addition of Herbal Ingredients and Oils and Constant stirring and mixing
↓
Pouring into Molds
↓
Cooling and Solidification Also Drying of Soap
↓
Evaluation of Herbal Soap,Result and Conclusion

Activity of Ingredients

Table 3. Biological Activities of Medicinal Plant Ingredients Used in Herbal Soap

Sr.No.	Ingredients	Pharmacological Activity
1	Neem	Anti Bacterial
2	Turmeric	Antimicrobial
3	Tulsi	Antifungal
4	Rose water	Cooling agent
5	Tomato	Skin brightening
6	Beetroot	Anti-inflammatory
7	Apricot	Exfoliating
8	Eucalyptus oil	Antiseptic
9	Coconut oil	Moisturizing
10	Vitamin E	Antioxidant

V. MAIN INGREDIENTS AND THEIR BENIFITS

1. Tomato:- Bright red tomatoes pack vitamin A along with C, while delivering powerful compounds like lycopene - these guard skin against harm from unstable molecules. Glow gets a boost because pigmentation fades slightly over time when tomato meets face regularly. Oil levels dip thanks to its gentle tightening effect on oily zones, shrinking pore appearance without harshness. Skin feels smoother, looks more even, simply due to steady protection from daily environmental wear. A natural shine

emerges - not flashy, just quietly alive - from consistent exposure to these protective plant elements.

2. Beetroot

Fresh beetroots pack a mix of vitamins, essential minerals, iron, along with vivid plant compounds called betalains. Skin gains strength when fed these nutrients, showing clearer tone and a soft radiance. Protection kicks in too - thanks to antioxidants and calming traits that guard against environmental stress and redness. Moisture levels rise, leaving texture revitalized, feeling cool and alive

Figure. Beetroot

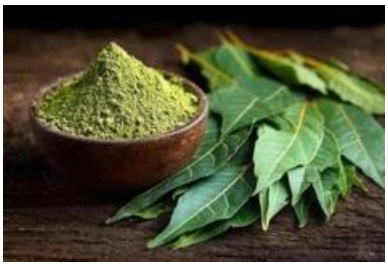
3. Apricot

Out of sunlight comes apricots, packed with vitamins A, C, E - moisture kicks in thanks to their fatty acid blend. Skin feels softer when treated regularly, almost like it remembers how to breathe. Instead of harsh scrubs, these fruits gently lift away old cells, making room. Elasticity returns slowly, not forced, just there one day. Smoothness sticks around if used often, nothing flashy, only steady results.

Figure. Apricot

4. Neem Powder

Deep inside, neem powder fights bacteria, fungus, and germs effectively. Because of this, breakouts, spots, and irritated skin stay at bay. When applied, it pulls out dirt while taming oily patches across the face. Herbal products often include it - just to keep skin balanced and clear. What shows up in many natural routines? This quiet workhorse.



Figurr. Neem Powder

5. Tulsi Powder

From nature's own shelf comes a green dust known for quiet strength - Tulsi powder fights unseen threats to the skin while guarding against daily wear. Instead of harsh treatments, it gently clears impurities using plant-powered chemistry found deep in its leaves. Skin often feels calmer after use, breathing easier under pollution and stress. Freshness returns not through strong scents but by supporting balance within the surface layers. Soothing relief appears quietly, like shade on a warm day. Clarity follows, built over time without sudden claims or loud promises.

Figure. Tulsi Powder

6. Turmeric

Curcumin inside turmeric gives it power against germs, swelling, and damage from stress. Skin feels calmer, fewer breakouts show up, dark spots fade a bit, tiny infections clear faster when used. Brighter

look comes through over time, cuts heal smoother, outer layers stay tougher with regular care.

Figure. Turmaric

7. Aloe Vera

Aloe vera brings moisture while calming heat and discomfort at once. With its touch, skin finds relief from dryness alongside quicker recovery when damaged. Instead of just softening, it fights swelling plus keeps harmful microbes away too. Smooth texture follows naturally because balance returns where irritation once lived.

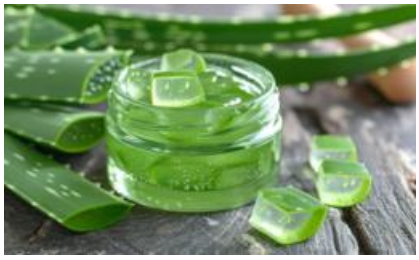


Fig.Alovera

8. Rose Water

Starting off gently, rose water works like a mild cleanser that resets your face. Instead of harsh chemicals, it keeps your skin's acidity steady while adding moisture throughout the day. Sometimes irritation fades when this liquid touches sensitive areas. A light scent comes through, not strong but noticeable after application. Softness appears slowly, almost without warning. Freshness stays around longer than expected, even hours later.

Fig.Rose water

9. Vitamin E

When sunlight hits your skin, vitamin E steps in like a quiet guard. Moisture stays put because it strengthens the barrier that keeps water locked in. Softness shows up more when cells get the support they need. Over time, fine lines slow down their arrival thanks to its presence. Healing gets a gentle push whenever small injuries occur. Elasticity holds on longer under daily strain. Environmental junk floating in the air? It takes some of the hit before harm spreads.

Fig. Vitamin E

10. Coconut Oil

From coconut comes a rich oil that works well inside plant-based soaps. Foam builds easily when it mixes into the blend. Dirt washes away because of how deeply it cleans. Microbes meet resistance thanks to its natural defense traits. Skin stays smooth and holds moisture longer after use. The feel lingers without greasiness behind.

Fig. Coconut Water

11. Eucalyptus Oil

From time to time, eucalyptus oil shows up in routines because it fights bacteria and fungi while feeling cool on contact. Instead of just sitting idle, it clears away dirt, slows down unwanted microbes, and leaves a crisp tingle behind. While that happens, its scent drifts through the air - calm, clean, noticeable without trying too hard.

Fig.Eucalyptus

12. Glycerine Soap Base

Starting out, glycerine soap base forms the core of herbal soaps. Its see-through quality stands out right away. A soft feel comes through when touched. Moisture stays locked in thanks to its makeup. Skin holds on to water better over time. Dry patches show up less often. Mildness defines how it behaves on sensitive areas. Daily routines include it without issue. The way it works fits most skin types easily.

Fig.Glycerine

VI. EQUIPMENT AND MATERIALS USED TO MAKE HERBAL SOAP

Figure.Equipmets Required For Formulation

● **Beaker:-** From its rounded base upward rises a straight-walled vessel found in nearly every lab setup - clear, sturdy, shaped simply. Glass forms it, sometimes stronger substitutes that resist thermal shock when warmed directly. Mixing happens inside its hollow center, where oils meet plant essences drop by drop. Heat moves through it slowly without cracking under careful application from below. Measuring fluids takes place along marked lines etched on one side, uneven but close enough for practical work. A lip curves outward near the top edge allowing liquid to slide out smoothly into another dish. Glycerine slips down its inner curve just like water or infused tinctures drawn from dried roots. Sizes differ across models - one holds five milliliters while others stretch past two liters tall. Handling feels balanced even when full Because weight distributes evenly around fingers gripping the outer wall. During creation of natural soaps, this tool stays within reach at all times nearby burners and storage trays.

● **Stirrer:-** Mixing things well matters when making herbal soap, so a tool keeps everything moving together smoothly. This device spreads out powdered herbs, oil drops, scent elements along with extra bits added into the batch. Without steady motion during prep, clumps might form - stirring avoids that problem entirely. Materials like glass show up in some versions while others use metal or hard plastic based on what suits lab needs best.

● **Petri Plate:-** A flat round container made of clear glass or plastic holds tiny amounts of material meant for study. When crafting plant-based soaps, this tool helps check how batches look, air-dry them slowly, keep portions aside for later review. Cleanliness stays steady because the smooth interior limits outside interference. Observation becomes easier thanks to its open yet contained space.

● **Water Bath :-** Most folks keep a water bath around when they need gentle warmth for delicate stuff. Instead of blasting something with fire, it slips containers into hot water - steady and even. Think melting glycerin soap or warming plant oils without wrecking their natural benefits. Heat stays balanced because boiling water won't spike past 100°C under normal conditions. Sudden bursts of energy can ruin sensitive mixtures, but this method avoids that trap. Herbal extracts behave better when not rushed by intense flames. Even essential oils hold onto their qualities longer with slow coaxing through warm liquid surroundings.

● **Burner:-** Heat comes from a burner, one tool found in labs for warming things directly. When making herbal soap, this device warms water or melts materials that need softening. Temperature control matters, so burners stay on through mixing steps. Glass containers often sit above the flame, held by stands, doing their part without fuss.6. Dropper A tiny glass tube with a rubber top picks up liquid when you squeeze the bulb. Because it lets out fluid one drip at a time, mixing scents or plant juices into handmade soap stays exact. Too much flavor or color changes how things turn out - this tool keeps that from happening. Each drop lands where needed without guesswork because the slender tip aims precisely.

● **Filter Paper :-** Paper made with tiny holes traps solids while letting liquid pass during filtering. When crafting plant-based soaps, this step pulls out bits of herbs or leftover chunks floating in mixtures. Clear fluid flows through, leaving mess behind. Smooth blends come from clean separation early on. Quality rises when grit stays put. What remains pours into the next stage cleaner than before.

VII. METHOD OF EXTRACTION

Herbal Ingredients Extraction for Soap Making Out of neem, tulsi, turmeric, beetroot, tomato, and aloe vera come bits worth keeping, once they've had a quick clean. Though some arrive fresh, others dried, each gets washed thoroughly to clear off grit. Next step involves smashing, shredding, or grinding - anything that spreads the material open. Warmth enters gently when water, maybe even purified, blends in; or else, slow soaking does the work later. What's valuable seeps out little by little, pulled quietly from the softened pieces. Fine strands stay caught while liquid slips past. That golden flow, now clear, moves into containers meant for shaping bars.

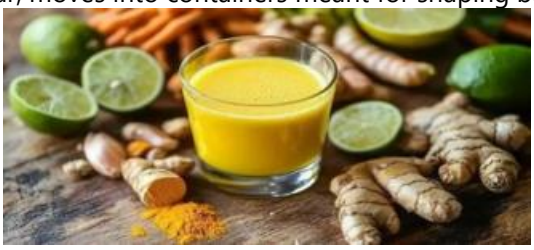


Figure. Methods Of Extraction for soap

Method Of Preparation

- **Step 1:-** Before anything else, gather every item needed, making sure each is spotless. Tomatoes, beetroots, neem powder, tulsi powder, turmeric, aloe vera, apricots – rinse them one by one. Instead of tossing everything together, break down the herbs slowly, either smashing them or letting them sit in water. Once softened, push the mix through filter paper to pull out clear extract.
- **Step 2:-** Start by chopping the glycerine soap base into tiny chunks. These bits go into A bowl set over warm water, where they soften while being stirred now and then. Once fully liquid, pour in the dried herb mixes a little at a time. Stir until everything blends smooth and even.
- **Step 3** :- After that, rose water goes in, along with coconut oil – this brings moisture while adding asoft scent. Vitamin E joins next, followed by eucalyptus oil, both lending soothing qualities. Stirring happens nonstop so everything mixes well, no gaps left behind.
- **Step 4 :-** Once cooled, the mix settles into shape inside molds or petri dishes left out in open air. When fully set, bars come loose from their holders – checked then for smell, shade, how firm they are, bubbles made, and balance of acidity

VIII. RESULTS AND OBSERVATIONS

EVALUTION PARAMETERS

Table 5. Evaluation Parameters Required For Soap

Sr.No	Parameter	Values
1	Colour	Dark Brown
2	Odour	Aromatic
3	Shape	Round
4	Foam	2.5 - 3 Cm
5	PH	7.0 - 7.5
6	Stability (High Temperature)	45°C

1. Colour

Observation: Dark Brown

Justification:- The dark brown colour of the herbal soap is mainly due to the presence of beetroot extract, tomato extract, neem powder, tulsi powder, and turmeric. During formulation, these natural ingredients release their pigments into the soap base. Unlike synthetic soaps that use artificial colours, herbal soaps obtain their colour naturally from plant constituents. The uniform dark brown colour indicates proper mixing and distribution of herbal ingredients throughout the formulation.

Observation: Aromatic and Pleasant

Justification: The pleasant aromatic odour is produced by eucalyptus oil, rose water, and the natural fragrance of herbal ingredients. During soap preparation, eucalyptus oil was added after melting the soap base to preserve its volatile aromatic compounds. The characteristic herbal fragrance confirms the successful incorporation of essential oils and improves consumer acceptability. The absence of unpleasant odour also indicates good quality and stability of the formulation.

2. Shape

Observation: Round Shape

Justification:- The soap acquired a round shape because the molten formulation was poured into a round mould before solidification. As the soap cooled, the glycerine base hardened and retained the shape of the mould. Uniform shape indicates proper pouring, molding, and setting of the soap. A well-defined shape improves appearance, handling, packaging, and market acceptability.

3. Foam Height and Foam Retention Observation:

-Foam Height: 2.5–3.0 cm

-Foam Retention: 3 Minutes

Justification:- Foam formation occurs due to the surfactant properties of the glycerine soap base and coconut oil. When the soap solution is shaken, air becomes trapped within the liquid, forming foam. Coconut oil contributes significantly to lather formation and stability. The observed foam height indicates good cleansing ability, while foam retention demonstrates that the foam remains stable for a sufficient period. The herbal extracts did not interfere with foaming, indicating compatibility with the soap base.

4. pH Stability

Observation: pH 7.0–7.3

Justification:- The pH of the formulated herbal soap was found to be near neutral, which is suitable for skin application. During formulation, the glycerine soap base and herbal ingredients were balanced in such a way that the final product did not become excessively acidic or alkaline. A pH range of 7.0–7.3 helps maintain skin health and minimizes irritation. Stable pH also indicates that no undesirable chemical reactions occurred among the ingredients during preparation or storage. Therefore, the formulation is considered safe and skin-friendly.The evaluation results indicate that the formulated poly-herbal soap possesses desirable physical characteristics. The natural colour confirms successful incorporation of herbal ingredients, the pleasant odour reflects the presence of essential oils, the uniform shape demonstrates proper molding, the satisfactory foam properties indicate good cleansing action, and the stable pH confirms safety for skin use. These findings suggest that the prepared herbal soap is effective, stable, and suitable for regular skin care applications.

Future Scope

The use of herbal products in cosmetic and pharmaceutical preparations has increased significantly due to their safety, effectiveness, and minimal side effects. Herbal soap has a wide future scope in the field of skin care and personal hygiene because people are becoming more aware of the harmful effects of synthetic chemicals present in commercial soaps. The prepared poly-herbal soap containing natural ingredients such as tomato, beetroot, apricot, neem, tulsi, turmeric, aloe vera, and essential oils can be further improved and developed for better therapeutic and cosmetic applications.Future research can focus on enhancing the stability, shelf life, and quality of herbal soap formulations by using advanced techniques and natural preservatives.

Additional medicinal herbs with antibacterial, antifungal, anti-aging, moisturizing, and antioxidant

properties may be incorporated to improve the effectiveness of the formulation. The soap can also be modified for specific skin types such as oily skin, dry skin, sensitive skin, and acne-prone skin.Further clinical and dermatological studies can be carried out to confirm the safety and efficacy of the formulation on human skin. Large-scale industrial production of herbal soap can be developed due to the increasing demand for natural and organic cosmetic products in the market. Eco-friendly and biodegradable packaging materials can also be used to make the product environmentally safe.The formulation may also be converted into other herbal cosmetic preparations such as liquid soap, face wash, body wash, shampoo, and medicated skin care products. Future studies may include evaluation of antimicrobial activity against different skin pathogens and detailed analysis of skin compatibility.

IX. CONCLUSION

From this research, it turns out herbal soap works well when made with plant-based materials, combined with essential oils and a glycerine base using an affordable, straightforward technique. Looking at how the product turned out, texture was firm enough, smell came across as nice, bubbles formed just right during testing. Appearance met expectations too, while the acidity level stayed within safe range for touching human skin. From neem to eucalyptus oil, natural elements like tulsi, turmeric, aloe vera, tomato, beetroot, apricot, and coconut oil brought protection against microbes, fungi, and damage while calming and hydrating the skin. Cleansing power showed up clearly in the bar, yet it left no harsh tightness or redness behind. Most days, it held up just fine - proof enough that regular use won't cause issues. Because plants break down easily, this kind of bar tends to leave less behind when washed away, unlike lab-made versions, So here's how it works - that homemade herbal bar could clean your skin while also helping treat small issues, all without costing much or harming nature. A single piece does two jobs at once yet stays gentle on hands. Money saved. Planet unharmed. Skin soothed. That kind of balance shows up rare

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