A Review On Extraction of Bauhinia Racemosa For Formulation of Wound Healing Cream

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ABSTRACT:

Medicinal plants were used from Vedic times. For many years they have been used to treat and prevent many types of disease.The Bauhinia racemosa, Lam belongs to the caesalpiniaceae family.It is a tiny, anfractuous, brist tree with dangled branches; this tree is established allover India, ascending to an altitude of 1,650m in the western Himalayas. This review aims to integrate traditional ethnomedicinal knowledge and modern scientific findings of Bauhinia racemosa to understand their therapeutic potential. Under the genus of bauhinia More than 200 species of flowering plants are available, in that racemosa is one.

Which is called as "sonpatta Tree" as it is considered as gold for its medicinal values. Almost each and every part of the plant has medicinal value. The bark and leaves of B. racemosa are sweet and pungent, cooling ,astringent and used in the treatment of headache, fever, skin diseases, blood diseases, dysentery and diarrhea.

An extract of the leaves has been shown analgesic, antipyretic, anti-inflammatory, antispasmodican. The tree has anti-tumor qualities and is widely used in Ayurveda to treat early stage cancer.

KEYWORDS:

Bauhinia Racemosa, Lupeol , Wound Healing

Introduction :

Creams are semisolid dosage forms intended for Topical application to the skin, placement on the Surface of the eye, or use nasally, vaginally or rectally for therapeutic, protective action, or Cosmetic function.

These preparations are utilized for the localized effects produced at the site of their application by drug penetration into the underlying layer of the skin or mucous membrane.

Creams are semisolid emulsion system with Opaque appearance as differentiated with Translucent treatments

Cream is utilized for external purpose. Creams are aiming for application to the skin and mucous layer.

Their consistence depends on whether the,

1. Emulsion is water in oil or oil in water.

2. Natureof solids inside phase

Mechanism of Cream :

Attract - Components draw moisture to heels from the inside out.

Lock - Component keep moisture at the heels.

Heal - organic extracts soothe pain, edema and soften heels.

Characteristics of Cream :

It should be liquefy at body temperature

It should be penetrate epidermis

It viscosity should be law they enough to permit spreading

Bauhinia racemosa Lam (The Sonpatta Tree) is a small, crooked, bushy, deciduous tree with drooping branches, which can grow in poor and very harsh climatic conditions. The deciduous tree is propagated easily from seed.

Bauhinia is a genus of more than 200 species of flowering plants of subfamily, Caesalpiniaceae. any species are widely planted in the tropics as orchid trees, particularly in northern India, Vietnam and southeastern China. This particular species racemosa is widely distributed throughout India, ascending to an altitude of 1,650 m from sea level in the western Himalayas, and in Ceylon, China and Timor.

It is a useful species for filling blanks in forest plantings and helps in preventing soil erosion. In the United States of America, the trees grow in Hawaii,coastal California, Texas, Louisiana, and Florida.

Figure.1. Bauhinia Racemosa

The plant is popularly known as Sittacha (Tamil), Banraj (Bengali), Ashta, Jhinjeri, Katmauli, Kachnal (Hindi), Aapta, Aralukadumandara, Vanasamtige (Kannada), Apto
(Konkani), Omboroda (Odia), Kosundra (Punjabi), Arampaali, Kutabuli, Malayaththi (M alayalam), Asundro (Gujrati), Apta, Sona (Marathi), Yamalapatrakah, Yugmapatra, Ashmantaka, Kanchini (Sanskrit), Atti, Tataki, Kokkumandarai, (Tamil), Arechettu (Telugu), Kachnaar (Unani). Other common names include Mountain Ebony and Kachnar (India and Pakistan).

The bark and leaves of B. racemosa are sweetish and acrid, refrigerant, astringent and is used in the treatment of headache, fever, skin diseases, blood diseases, dysentery and diarrhea

A decoction of the bark is recommended as a useful wash for ulcers. The tree is demonstrated to have anti-oxidant and hepato-protective effects. An extract of the leaves has been proved to show analgesic, anti-pyretic, anti-inflammatory, anti-spasmodic, anthelmintic and anti-microbial activity.

Parts	Characteristics
Plant	Warm climates support the growth of small ,bushy ,deciduous Trees with drooping limb and unbranched trunk
Stem	Bluish black rough ,pinkish red inside turning brown on exposure .Rough with vertical cracks, young twigs hairy. Longitudinally fissured
Leaves	Green, longer than it is wide and complex. Oval, rounded at the tip, and when young, pubescent beneath the leaflet. 2–5 cm long, 2.5–7.5 cm wide, separated into two lobes halfway down, glabrous above ,hairy below ,base typically cordate,7-9 nerved, and petiole7.0–18 mm long.
Flower	White or pale yellow, terminal or leaf-opposed racemes. Small flowers are borne in loose racemes,5 - 10 cm long. Flowers range in diameter from 7.5 to 12.5 cm, and are white, with five narrow lance-shaped petals, ten fertile stamens ,and filaments with hairy bases
Seed	Seeds 12 to 20 glabrous dark reddish brown or black, compressed 7-8mm long.

TABLE 1: PLANT INFORMATION

Parameters	Bauhinia Racemosa
Texture	Leaves are smooth ,slightly laethery
Smell	Mild and slightly aromatic
Taste	Bitter ,slightly astringent
Colour	The leaves are green and flower are typically white or light pink

TABLE 2 : ORGANOLEPTIC PROPERTIES

Plant Part	Chemical Constituents
Leaf	Flavonols(kaemferole, Quercetin) and coumarine (Scopoletin and scopolin)
Bark	Octacosane, B-amyrin , B- sitosterol
Seed /Fruit	Flavonoids, crude protein, and lipid
Root	Pentacyclic lupeol , betulin, β-sitosterol , and tetracyclic 2, 2 dimethyl chroman
Heart wood	Stilbene (reseveratrol)

TABLE 3: CHEMICAL CONSTITUENTS

Principle Advantages:

Speeds up tissue restoration and wound healing .Has antibacterial qualities that help stop infections.

Relieves irritation and lowers inflammation Increases the production of collagen for better skin renewal.

Safe for delicate skin because it doesn't include harsh ingredients. This scientifically supported composition offers a safe and efficient wound care solution by combining contemporary dermatological research with ancient herbal knowledge.

Our Bauhinia racemosa Wound Healing Cream is an essential for natural and efficient wound care, and it works for all skin types.

The body's natural reaction to damage, infection, or negatives stimuli is inflammation.

It is a defense mechanism that aids in the body's healing process, but when it persists for an extended period of time, it may lead to a number of health issues

FIGURE 2 : SKIN INFECTION

Inflammation is of two types :

1. **Acute inflammation**

This is the quick, short-term reaction to an infection or injury. Usually, there is pain, swelling, heat, and redness. When you cut your finger, for instance, the body sends immune cells to the region to fight off infection and begin healing, which can cause the area to swell and turn red.

2. **Chronic Inflammation:**

This happens when inflammation lasts for a long time without any visible signs of infection or injury. Numerous medical disorders, including autoimmune illnesses, diabetes, heart disease, and arthritis, are associated with chronic inflammation

Mechanism of Action :

Through a variety of inflammatory processes, topical therapies interact with nociceptive neural networks in the skin's outer layers.

The stratum corneum, which can be a strong barrier, must be penetrated by these compounds after they are applied to the skin.

Alongside the development of novel topical medications, substances that facilitate this penetration have also changed.

Current topical treatments such as capsaicin, ketamine, local anesthetics, and non steroidal anti-inflammatory drugs (NSAIDs) have noteworthy prior histories that merit examination.

The introduction of novel drugs that target particular pain pathways and advancements in drug penetration technology via the skin barrier may lead to an increase in topical methods of administration.

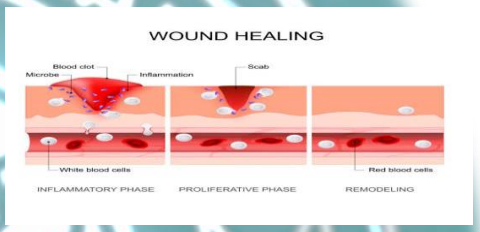

FIGURE 3 : WOUND HEALING

Clinical Uses :

- Burns: Bauhinia Racemosa has been shown to improve re- epithelialization and lessen the creation of scars, which aids in the healing of burns.
- Antibacterial: The bacterial infection is treated using Bauhinia racemosa.
- Diabetes: A common treatment for diabetes is Bauhinia racemosa Lam (BR).

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- seed protein fractions, amino acid composion, minerals and antinutritional factors.
- Seeds of Bauhinia racemosa were enriched in Ca and Fe.
- The contents of the essential amino acids lysine, tyrosine and phenylalanine
- were fairly high as the contents of sulphur amino acids were limiting.
- Antinutritional substances like total free phenols, tannins, L-DOPA and phyto-haemagglutinating activity also were investigated 3Fe.

Property	Description
Chemical name	Lup-20(29)-en-3B-ol
Chemical class	Pentacyclic Triterpenoid
Source	Found in Bauhinia racemosa bark ,leaves and other medicinal plants like aloevera .

- The contents of the essential amino acids lysine,tyrosine and phenylalanine

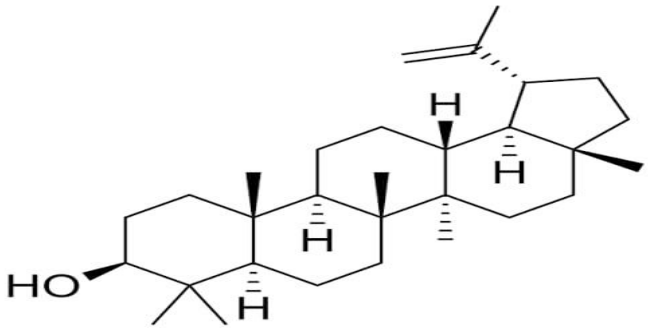

FIGURE 4: LUPEOL

Mechanism	Action
Anti –inflammatory	Reduces pro-inflammatory cytokines (TNF-a, IL-6) and inhibits COX enzymes minimizes swelling and redness
Anti microbial	Inhibits bacterial growth on wounds, reducing infection risk
Anti oxidant	Scavenges free radicals that delay healing

TABLE 5 : ROLE OF LUPEOL IN WOUND HEALING

Formulation aspect	Description

Extract used	Ethanolic or methanolic bark/leaf extract (standardized for Lupeol content)
Base type	Water-in-Oil (W/O) emulsion for good absorption
Lupeol concentration	Typically 0.5-1.5% ω/ω total cream (depending o extract potency)
Cream pH	5.0-6.0 (skin-friendly)
Preservatives / stabilizers	Natural or mild synthetic (e.g., phenoxyethanol) to ensure microbial safety

TABLE 6 : FORMULATION OF LUPEOL IN WOUND HEALING

METHODS:

SOLVENT EXTRACTION METHOD :

Solvent : Hexane, chloroform, or ethanol (lupeol is nonpolar).

Procedure:

1. Take 50–100 g of powdered plant material.

2. Perform Soxhlet extraction for 6–8 hours using n-hexane or chloroform.

3. Evaporate the solvent under reduced pressure using a rotary evaporator

4. The resulting residue (crude extract) will contain lupeol along with other triterpene

PREPARATION OF WOUND HEALING CREAM :

1. Prepare the oil phase
2. Prepare the water phase
3. Emulsification
4. Cooling
5. Add heat sensitive ingredients
6. Add preservatives& final adjustmens
7. Packing

Sr.No	Component	Function	Examples
1	Emollients	Soften skin , create a protective barrier	Mineral oil ,petrolatum
2	Humectants	Attract and retain moisture, maintain cream texture	Glycerin , propylene glycol ,panthanol
3	Oculusive agents	Protect wound surface ,promote moist wound environments	Beeswax ,Lanolin
4	Skin repair agents	Stimulate cell regeneration , support collagen production	Allantoin ,vitamin e
5	Anti inflammatory extracts	Reduceredness, swelling,irritation	Aloe vera gel , turmeric extract
6	Emulsifiers	Help mix oil and water phases	Cetyl alcohol ,stearyl alcohols
7	Thickening agents	Provide proper viscosity	Carbomers, xanthan gum
8	Preservatives	Prevent microbial contamination	Paraben , potassium sorbate
9	Antioxidents	Prevents rancidity of oil	Vitamin c derivatives
10	pH adjusters	Maintain skin friendly pH	Citric acid , sodium hydroxide

TABLE 7 : FORMULATION TABLE FOR WOUND HEALING CREAM

FUTURE SCOPE :

1.Standardization of Extracts:

Future studies should focus on developing standardized extraction protocols to ensure consistent phytochemical composition. Quantification of major bioactive compounds such as flavonoids, tannins, and phenolics will improve reproducibility and reliability of results.

2. Detailed Mechanistic Studies:

Advanced research is required to elucidate the molecular mechanisms involved in wound healing, including:

Effects on collagen synthesis

Fibroblast proliferation

3. Development of Novel Herbal Formulations:

There is significant potential to develop innovative topical formulations, such as:

Gels and ointments

Nano emulsions

Hydrogels

4. Toxicity and Safety Profiling:

Comprehensive acute, sub-chronic, and dermal toxicity studies are needed to establish the plant's safety profile. This will be crucial for its future acceptance in pharmaceutical and cosmeceutical markets.

5. Comparative Studies

Comparative evaluation of B. racemosa with other established wound-healing

plants (e.g., Aloe vera, Centellaasiatica, Curcuma longa) may help determine its relative effectiveness and unique advantages**.**

6. Clinical Trials:

Human clinical studies are completely lacking. Conducting well-designed phase I–III clinical trials will be essential for:

Validating therapeutic efficacy

Establishing dosage and safety

Summary :

The plant Bauhinia racemosa is a very important plant that has wide applications in the medicinal system. All parts of the plant like root, leaves, stem, flower, and seed possess pharmacological activity. The plant Bauhinia racemosa has chemical constituents as flavonoids, crude protein, and lipid, tri-terpenoids (α-amyrin), stilbenes (resveratrol), tetracyclic lupeol, betulin, β-sitosterol. These active chemical constituents impart a variety of medicinal uses to the plant antioxidant, antiulcer, anticancer, antihistamine, antidiabetic, anthelmintic, antimicrobial, antipyretic, and analgesic. The plant also has nutritional importance. The global scene is now pointing to the use of non-toxic plant products with traditional medicinal uses. Therefore, the development of new drugs should be undertaken for centuries for the control of various diseases.

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