



FORMULATION AND EVALUATION OF RUBIA CORDIFOLIA HERBAL FACE PACK

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ABSTRACT

Herbal cosmetics have gained significant attention due to their safety, effectiveness, and minimal side effects compared to synthetic products. The present study was aimed at the formulation and evaluation of a herbal face pack containing Rubia cordifolia as the major active ingredient. Rubia cordifolia is well known for its antioxidant, anti-inflammatory, antimicrobial, and skin-purifying properties, making it beneficial for maintaining healthy and glowing skin. The herbal face pack was prepared using natural ingredients such as Rubia cordifolia powder, multani mitti, aloe vera powder, turmeric, sandalwood powder, and rose petal powder in suitable proportions. The prepared formulation was evaluated for various physicochemical parameters including organoleptic properties, pH, particle size, washability, irritancy, spreadability, flow properties, and stability. The formulation

showed good appearance, smooth texture, acceptable pH suitable for skin application, easy washability, and no signs of irritation on the skin. The herbal face pack also demonstrated satisfactory cleansing and skin-refreshing effects. The study concluded that the formulated herbal face pack containing Rubia cordifolia can be used as a safe and effective natural cosmetic preparation for improving skin appearance and promoting healthy skin. The use of

herbal ingredients provides a cost-effective and eco-friendly alternative to synthetic cosmetic products.

KEYBOARDS: Herbal face pack, *Rubia cordifolia*, Manjistha, Herbal cosmetics, Skin care, Antioxidant activity, Anti-inflammatory activity, Natural formulation, Evaluation parameters, Ayurvedic cosmetics.

INTRODUCTION

In recent years, herbal cosmetic preparations have become increasingly popular because they are considered safer and more compatible with the skin than synthetic products. Herbal formulations contain naturally occurring phytoconstituents that help nourish, protect, and improve skin health with minimal adverse effects. Face packs are one of the most commonly used cosmetic preparations for cleansing the skin, improving complexion, reducing acne, removing excess oil, and providing a refreshing effect.

Human skin is continuously exposed to dust, pollution, sunlight, and microorganisms, which may lead to dryness, pigmentation, acne, premature aging, and other skin problems. Proper skin care is therefore essential for maintaining healthy and attractive skin. Herbal face packs are beneficial because they improve blood circulation, remove dead skin cells, tighten the skin, and provide essential nutrients to the skin surface.

Among various medicinal plants used in cosmetics, *Rubia cordifolia*, commonly known as Manjistha, occupies an important place in traditional Ayurvedic medicine. The plant belongs to the family Rubiaceae and is widely known for its therapeutic properties. It contains bioactive constituents such as anthraquinones, glycosides, tannins, flavonoids, and triterpenoids, which contribute to its medicinal value. *Rubia cordifolia* possesses antioxidant, antimicrobial, anti-inflammatory, and skin-purifying activities, making it useful in the treatment of acne, pigmentation, and other skin disorders.

The present study focuses on the formulation and evaluation of a herbal face pack containing *Rubia cordifolia* along with other natural ingredients such as multani mitti, aloe vera, neem, turmeric, sandalwood, and rose petal powder. These ingredients were selected because of their beneficial effects on the skin, including cleansing, moisturizing, soothing, and antimicrobial actions. The prepared formulation was evaluated for various physicochemical

and cosmetic parameters to determine its suitability, safety, and effectiveness for topical application.

The use of herbal ingredients in cosmetic formulations not only enhances therapeutic value but also provides an economical, eco-friendly, and easily acceptable alternative to synthetic skin care products.

Botanical profile of *Rubia Cordifolia*

- **Scientific name :** *Rubia cordifolia* Linn
- **Common name :** Indian Madder
- **Ayurvedic name :** Manjistha
- **Family :** Rubiaceae
- **Kingdom :** Plantae
- **Stem :** Long ,rough , climbing stem with reddish bark
- **Root :** Cylindrical , Red-coloured roots used medicinally



Figure 1: *Rubia cordifolia* Roots.

Morphological Description

- **Shape:** Long, slender, climbing or creeping herb with cylindrical roots and heart-shaped leaves
- **Size:** Stem may grow several meters in length; leaves are about 5–10 cm long; roots are thick and elongated

- **Colour:** Roots are reddish-brown externally and red internally; leaves are green; flowers are greenish-yellow; fruits become dark purple or black when ripe
- **Surface Texture:** Stem and leaves are rough due to the presence of small hooked prickles; roots are slightly rough and woody
- **Odour:** Characteristic faint earthy odour
- **Taste:** Slightly bitter and astringent
- **Special Features:** Presence of red-colored roots containing medicinal pigments; hooked prickles help in climbing; widely used in Ayurvedic skin and blood purification preparations

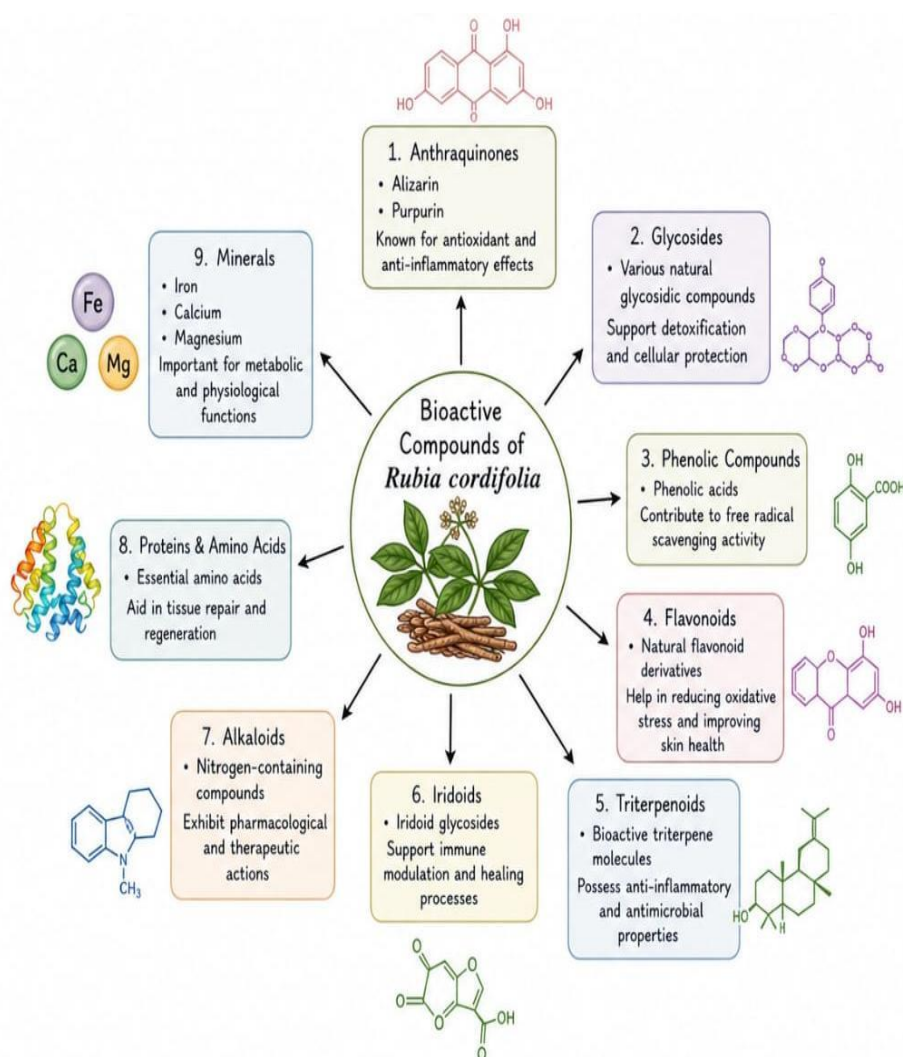


Figure 2: Biactive Compound Of Rubia Cordifolia.

Biological compound of Rubia Cordifolia

Rubia cordifolia (commonly known as Manjistha or Indian madder) is a well-known medicinal plant used in traditional systems like Ayurveda. Modern scientific studies confirm that it contains various bioactive compounds such as anthraquinones, flavonoids, and terpenoids, which are responsible for its wide range of biological activities.

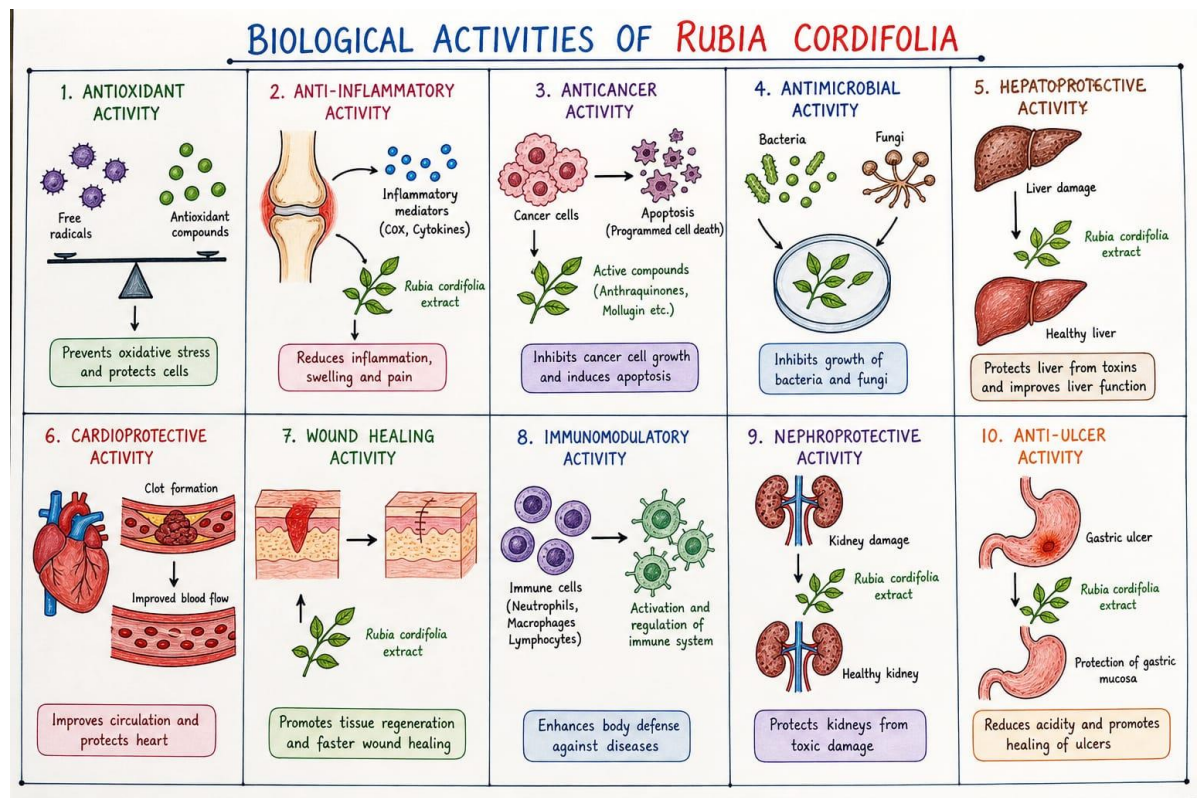


Figure 3: Biological Activity Of Rubia Cordifolia.

Table 1: Biological Activities of Rubia Cordifolia.

No	Activity	Key components	Mechanism	Health Impact
1	Anti-oxidant Activity	Quercetin, Rutin	Free Radical scavenging	Cell Protection
2	Anti-microbial Activity	Anthraquinones Flavonoids, tannis	Microbial Inhibition	Disease Prevention
3	Wound Healing Activity	Glycosides Tannin Phenolic Compound	Tissue Regeneration	Faster Recovery
4	Anti- Inflammatory Activity	Kaempferol	Inflammation Suppression	Swelling Reduction
5	Immunomodulatory	Polysaccharides	Immune Regulation	Immune Balance

Characterization of Rubia Cordifolia

1. Morphological Characterization

- Plant type: Perennial climbing herb

- **Stem:** Long, rough, quadrangular, and prickly
- **Leaves:** Green, heart-shaped, arranged in whorls of 4–6 leaves
- **Roots:** Cylindrical, reddish-brown externally and red internally
- **Odour:** Slight characteristic odour
- **Taste:** Bitter and astringent

2. Microscopic Characterization

Root Microscopy

1. Presence of cork cells with brown colouring matter
2. Well-developed cortex
3. Xylem vessels and medullary rays clearly visible
4. Abundant red colouring pigments in parenchymatous cells
5. Calcium oxalate crystals may be present

3. Chromatographic Characterization

1. Presence of reddish spots in TLC confirms anthraquinones
2. HPLC helps in quantitative estimation of active compounds

4. Phytochemical Characterization

- **Anthraquinones-** Antioxidant and skin protective activity
- **Flavonoids-** Free radical scavenging activity
- **Triterpenoids-** Anti-inflammatory effects
- **Alkaloids-** Biological activity enhancement
- **Phenolic compounds-** Antioxidant potential

MATERIALS AND MEHODS

Sr. No.	Ingredient	Quantity (for 50gm)	Role
1	Rubia Cordifolia Powder	10 mg	Skin Brightening, Anti-hyperpigmentation, Skin Tanning
2	Hibiscus Flower Extract	20 ml	Anti-oxidant and Anti-inflammatory
3	Sandalwood Powder	10 mg	Cooling effect
4	Rose Water	q.s	Hydration
5	Aloe vera gel	2 ml	Moisturizing the Skin

Procedure**Step1: Preparing hibiscus flower extract**

1. wash and dry the hibiscus flower
2. Remove the petals for extraction.
3. Use Soxhlet apparatus for the extraction.

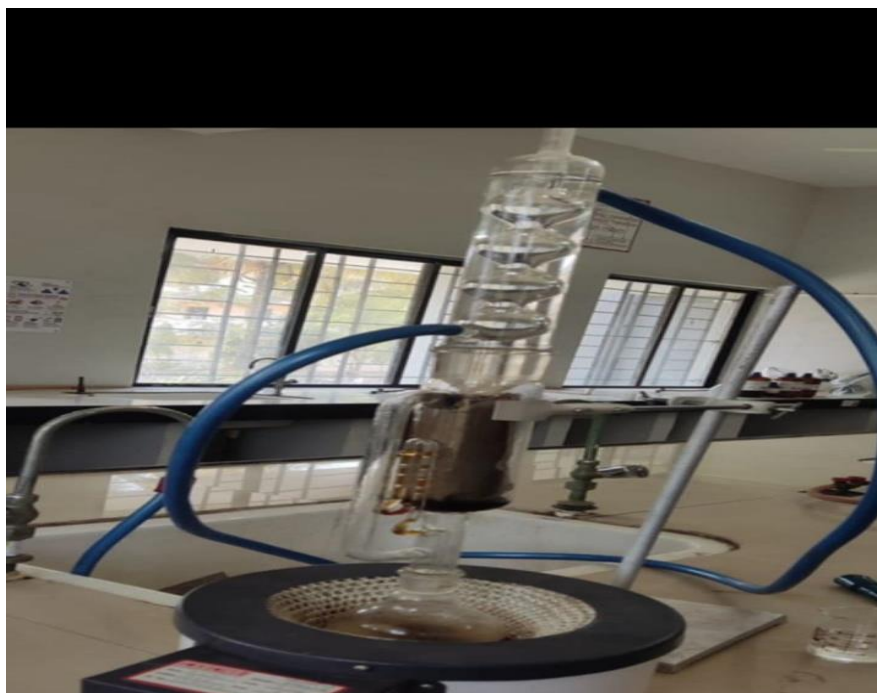


Figure 4: Soxhlet apparatus for Extraction.

Step2: Preparation of *Rubia Cordifolia* powder

1. Wash and dry the *Rubia Cordifolia* stem
2. Grind it into fine powder
3. Weigh around 50g *Rubia Cordifolia* stem powder.
4. And add it in the bowl.

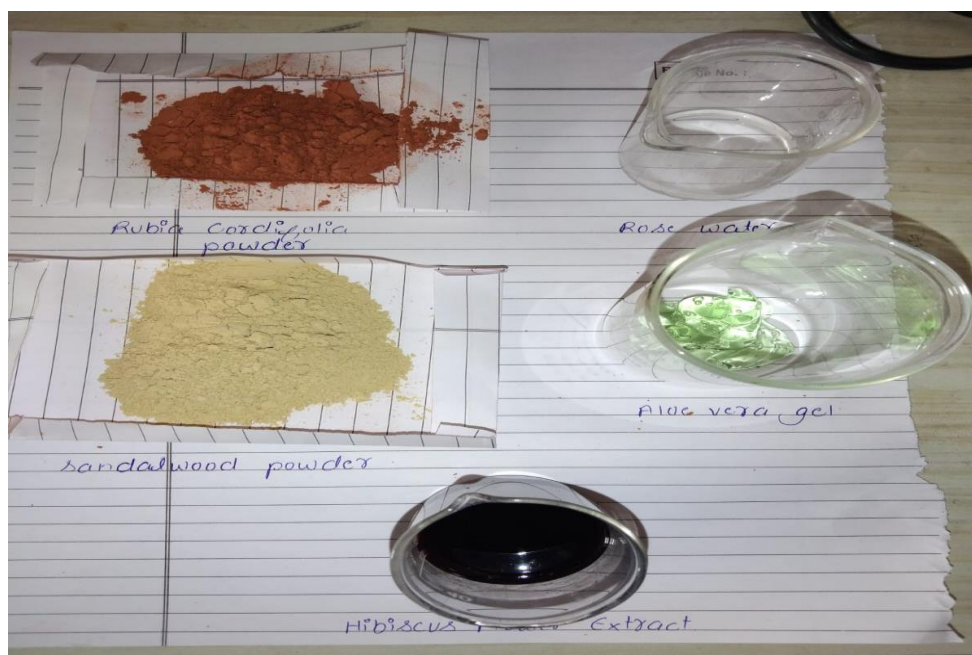


Figure 5: Ingredients of Rubia Cordifolia Herbal Face Pack.

Step3: Formation of herbal face pack

1. Take a beaker, add *Rubia Cordifolia* powder (10mg) in it.
2. (20ml) hibiscus flower extract add in the beaker with continuous stirring, for 10 minutes let formulation set.
3. After given minutes add sandalwood powder (10mg) in it again start stirring.
4. By adding aloe vera gel (2ml) in formulation, and give them good mix with stirrer until it completely mixed and show nice brown colour.



Figure 6: Herbal Face Pack.

Evaluation Parameter

Sr No.	Parameter	Observation	Result
1.	Physical Evaluation Appearance Colour Odour Texture	No Creaming Dark Brown colour Pleasant Smooth	Acceptable
2.	Ph Measurement	5.60	Acceptable
3.	Spreadability	Easily Spreable	Acceptable
4.	Washability	Easily Washable	Acceptable
5.	Irritancy Test	No Itchiness No Redness No Swelling	Acceptable
6.	Microbia Growth testing	No Microbial Growth	Acceptable
7.	Viscosity Measurement	Medium Viscosity	Acceptable

RESULT

The prepared *Rubia Cordifolia* and hibiscus herbal face pack underwent a series of evaluation tests to assess its quality and suitability for formulation use. The appearance of the herbal face pack was observed to be clear and uniform with a dark brown coloration, indicating good dispersion of rubia cordifolia and hibiscus flower. It exhibited a mild, herbal odour and a smooth, non greasy texture, making it suitable for topical application. pH measurement of the face pack is 5.6 which is suitable for all types of skin type. Well they are also observed that it is easy to spread, easy to wash and no irritancy after applying the face pack. Overall, these evaluation results confirm that the rubia cordifolia and hibiscus is a stable, well-characterized formulation suitable for further pharmaceutical or cosmetic development.

CONCLUSION

The formulated *Rubia Cordifolia* herbal face pack demonstrated favourable and consisted pH. Sensory evaluation confirmed its acceptable appearance, odour, and texture, while long term storage tests revealed no signs of microbial growth. These results indicate that the rubia cordifolia herbal face pack is a stable, well-tolerated formulation with potential application in pharmaceutical, cosmetic products due to its enhanced solubility and bioavailability

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