



## Formulation and Evaluation of Shankpushpi Cream

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Received: 12-11-2024; Revised: 31-01-2025; Accepted: 13-02-2025; Published online: 20-02-2025.

### ABSTRACT

Herbal ingredients have gained significant traction in the cosmetic industry due to their multifunctional properties and safety profiles. Among these, shankpushpi extract (*Convolvulus prostratus*) stands out for its potential therapeutic applications in skincare. This study aimed to formulate a cold cream using shankpushpi extract, hypothesizing that its rich bioactive composition would enhance the cream's dermatological and cosmetic efficacy. The cold cream was prepared using emulsifying wax, liquid paraffin, lavender essential oil, and distilled water, with shankpushpi extract as the primary active component. Phytochemical screening of the extract revealed the presence of alkaloids, flavonoids, tannins, terpenoids, glycosides, saponins, phenolic compounds and steroids, each contributing unique therapeutic benefits. Standardized tests confirmed the extract's antioxidant, anti-inflammatory, antimicrobial, and wound healing activities, which were incorporated into the formulation. The cream exhibited a stable and homogenous consistency, with a skin-compatible pH and excellent spreadability. It provided hydration and soothing effects while reducing redness and irritation. Its bioactive profile supported skin repair, combated oxidative stress, and improved overall skin texture, making it particularly beneficial for dry, damaged, or acne-prone skin. This research highlights the transformative potential of Shankpushpi extract in cosmeceuticals, showcasing its ability to deliver multiple skin benefits in a single formulation. The finding supports its inclusion in natural skincare products as a safe and effective alternative to synthetic ingredients. Future investigations could explore its clinical and broader commercial viability. This formulation bridges the gap between traditional herbal remedies and innovative skincare solutions.

**Keywords:** Emulsifying wax, cold cream, natural skincare, *Convolvulus prostratus*.

### INTRODUCTION

The cosmetic word derived from Greek 'kosmesticos' which means to adorn. Cosmetics are products used to beautify skins to purify the skin. The cosmetics, according to the drug and cosmetic act is defined as articles intended to be rubbed, poured, sprinkled or sprayed on, introduced into or otherwise applied to the human body or part there for cleaning beautifying, promoting, attractions or altering the appearances. From ancient times till now people are still using herbal or polyherbal cosmetics for the beautification of skin. Galen a Greek physician who created the cold cream in the second century is credited with developing it. He made a mixture of water, beeswax and rose petals. These were the main moisturizer components he used to create the cold cream. Winter care creams are suitable for three types weather cream which is generally enriched with natural oils and various extracts, protect the skin from getting dry<sup>1</sup>.

#### Shankpushpi



**Common name:** - morning glory

**Botanical name:** - *Convolvulus prostratus*

**Biological source:** - whole plant of *Convolvulus pluricaulis* Choisy (convolvulaceae) syn (*C. pluricaulis*) and *Convolvulus microphyllus* Sieb.

**Family:** - *Convolvulaceae*

**Mechanism of action:** - reduce anxiety and stress by controlling the production of stress hormones, adrenaline and cortisol.

**Pharmacological action:** - calms the brain and relieve stress as well as anxiety. Improves memory by acting as a brain tonic due to its Medhya (improves intelligence) property.

India is enriched in a diversity of plants since past times. Herbal plants are indigenous and very potent that considered a gift of nature. Shankpushpi, which goes by the botanical name *Convolvulus pluricaulis* is a perennial plant native to India. Well-known as morning-glory, speed wheel or Aloe weed in English, this medicinal herb has specific arrowhead-shaped leaves and bulb-shaped blue or white flowers. The herb is extremely beneficial and is used from root to tips for its wide range of therapeutic benefits. Shankpushpi is native and very noteworthy herb which claim to enhance the function of nervous system. The herb is used in traditional clinical practice by many Ayurveda practitioner as a single herb as well as in formulations due to its potential bioactive components. In Ayurveda the therapeutic properties of plants are basically explained based on rasa (taste), guna, virya, vipaka, karma and is

exhibits the *katu-kasya* in *rasa*, *guru*, *snigdha*, *sara*, *pischila* in *guna*, *ushana* in *virya*, *Madhura* in *vipaka*, *medhakrita*, *swarakara*, *grahabhutadidoshhara* in *karma*. The word *medhakrita* means it promotes intellectual activity, *swarakara* means helps improve the voice activity, *grahabhutadidoshhara* means helps to treat various mystic diseases, that is considered as viral or bacterial diseases. Though, based on flower morphology and the nootropic potential, four plants, namely *canscora decussata* Schult., *Clitorea ternatea* Linn., *convolvulus pluricaulis* Choisy., and *Evolvulus alsinoids* Linn. Are considered as Shankpushpi by Indian Ayurvedic practitioners, *Convolvulus pluricaulis* variety is mentioned as 'Shankpushpi' in Ayurvedic pharmacopoeia of India<sup>2</sup>.

Shankpushpi provides its non-toxic properties as there are number of research done and published on various sites. It helps to balance the *tristambha* of body i.e. vitiated *kapha-vaat-pitta*. There are so many varieties suggested on this plant and studies done on different varieties of shankpushpi have provided healing treatment in central nervous system disorders, anti-anxiety, anti-amensic. The various chemical constituents studied present in herb like alkaloids, flavonoids, etc. may be responsible for its biological actions in the managing the disorders. It contains carbohydrate-D-glucose, Maltose, Rhamnose, Sucrose, Starch, Proteins, Amino acids and the Alkaloids-convolvine, convolamine, phyllabine, convolidine, confoline, convoline, subhirsine, convosine and convolidine along with scopoline and flavonocoumarin, Beta-sitosterol, fatty acids and wax constituents, hydrocarbons, aliphatic and sterol.

Shankpushpi is a plant used in ayurvedic medicine, an ancient Indian medical system that combines natural products with lifestyle approaches. Shankpushpi is a traditional herbal remedy blessed with umpteen health benefits. It has been used for improving memory and cognitive function, reducing stress and anxiety, and to treat conditions such as insomnia and diabetes. Some preclinical studies suggest that *shankpushpi* has memory-enhancing, antioxidative, and anti-inflammatory effects. This herb is considered safe for pregnant women as it effectively strengthens the uterus and prevents miscarriages.

Shankpushpi is extremely effective in treating various heart ailments due to its strong antioxidative nature. It strengthens the heart muscles and prevents lipid build up in the blood vessels. The digestive properties found in this traditional herb is found to be extremely beneficial in improving digestion. It stimulates the secretion of digestive juices thereby increasing the absorption of essential nutrients and enhancing digestion.

Shankpushpi plays a vital role in treating various skin infections. The abundance of antioxidants in the potent herb is very effective in removing harmful free radicals from the body and its antipruritic nature alleviates itching sensations caused due to allergic conditions like psoriasis, eczema, acne, sunburn, etc. it also acts as a skin tonic, penetrates deep into the skin, nourishes it from within and imparts a radiant and healthy glow. Apart from this,

antioxidative nature also treats the various signs of aging like wrinkles, fine lines, dark spots, etc. it helps in achieving a younger rejuvenated radiant skin.

Several studies show that *shankpushpi* has potent anti-bacterial properties that are extensively used for removing bacteria from the body. The bioactive compounds present in this traditional herb not only prevents worm infestation but also treats wounds and improves healing.

## METHODOLOGY

The *convolvulus prostratus* is collected from the local botanical garden and authenticated. The other required ingredients are collected from laboratory of the institution. The ingredients utilized during the cold cream preparation are enlisted in table 1:

**Table 1:** Ingredients used for cold cream formulation

Ingredients	Uses
Emulsifying wax	Ideal medium for blending of fine cream
White soft paraffin	Emollient (soothes & softens the skin)
Liquid paraffin	Emollient (locks the moisture in skin)
Purified water	Hydrates and refresh the skin
Glycerin	Improves skin barrier, protection against skin irritants & wound-healing.
Lavender oil	Antioxidant, anti-inflammatory

### Method of preparation:

- Step 1: - extraction process of shankpushpi
  - Fresh shankpushpi flowers were collected and washed with distilled water.
  - after proper drying of flowers, petals of shankpushpi were plucked from the flower and collected in mortar and pestle.
  - then it is triturated vigorously till it gains paste like consistency. afterwards it is filtered to remove the impurities.
  - Then the filtrate or the filter product which is a clear decoction of shankpushpi was used in the preparation<sup>3</sup>.

- Step 2: - preparation of emulsion

It's an w/o-based emulsion

- Firstly, each of the required ingredients is weighed.
- Next, we add the weighed emulsifying wax to the china dish, which serves as the base in the formulation.
- Then the measured liquid paraffin is added to the china dish.



- After melting the emulsifying wax and making it miscible with liquid paraffin, we combine the two ingredients using a glass rod and heat the mixture using a water bath at 70°C.
- Then the china dish was taken out of the water bath and set aside.
- The temperature of the combined solution should be maintained up to 70°C.
- Next, required amount of water and glycerin is boiled at 70°C using water bath.
- After the solution is boiled then it is added to the above mixture of emulsifying wax and liquid paraffin drop by drop while triturating it vigorously in the mortar pestle.
- Once the desired creamy consistency is attained, add the extraction of shankpushpi flower made in step-1.
- As a final touch, a drop or two drops of lavender oil is added to the mixture.

- After that, the whole mixture is continuously stirred using a glass rod until it gains a semi-solid consistency<sup>4</sup>.



Figure 1: Label for cream formulation.

**EVALUATION:**

**Evaluation of flower extract:**

Qualitative Phyto-chemical investigation of Shankpushpi flower extract<sup>5</sup>:

Table 2: Phyto-chemical screening of shankpushpi extract

Sr. no.	Test		Observation	Result
1.	Test for alkaloids:	Mayer’s test Wagner’s test	Cream precipitate Red color precipitates	+ +
2.	Test for glycosides:	Keller-killiani test  Bromine water test	Reddish brown color appears at junction of the two liquid layers and upper layer appears bluish green.  Yellow precipitates	+  +
3.	Test for flavonoids:	Lead acetate test  Shinoda test	Formation of intense yellow color.  Appearance of pink, red or orange color.	+  +
4.	Test for tannins:	FeCl <sub>3</sub> test	A blue-green or black color formation.	+
5.	Test for phenolic compounds:	Acetic acid solution test	Red color solution	+
6.	Test for terpenoids:	Copper acetate test	Formation of emerald green color.	+
7.	Test for steroids:	Salkowski test	The formation of reddish-brown layer at the interface.	+



**Shankpushpi extract (*Convolvulus prostratus*) properties:**

shankpushpi is known for its potential antioxidant & anti-inflammatory properties. It may soothe & rejuvenate the skin.

Shankpushpi extract may contribute to skin repair and regeneration due to its antioxidant properties, potentially reducing oxidative stress on the skin. It could also have calming effects, making the cream suitable for sensitive & inflamed skin<sup>6</sup>.

**➤ Antioxidant properties:**

Shankpushpi extract is rich in flavonoids and other oxidants which help neutralize free radicals that cause stress on the skin.

Antioxidants are crucial in preventing pre-mature aging, reducing fine lines, and improving overall skin health by protecting cells from oxidative damage caused by environmental factors (like UV exposure & pollution).

**➤ Anti-inflammatory action:**

shankpushpi contains active compounds like alkaloids & glycosides, which have potent anti-inflammatory effects.

These anti-inflammatory properties help in soothing & calming inflamed or irritated skin, making it ideal for treating conditions such as dermatitis, eczema or even acne. Reducing inflammation also supports skin repair processes & minimizes redness and irritation.

**➤ Wound healing & skin regeneration:**

Traditionally, shankpushpi has been used for wound healing due to its tissue repair & regenerative properties.

By enhancing collagen production and promoting faster wound healing, the extract can aid in the recovery of damaged and compromised skin, whether from abrasions, cuts or irritation. It could also help in reducing the appearance of scars and improve overall skin textures.

**➤ Cognitive and stress-relief benefits (indirect skin benefits):**

Shankpushpi is known for its nootropic (brain-enhancing) effects, and it is used in ayurvedic medicine to alleviate stress and anxiety.

Although this function is systemic, stress & anxiety are known to aggravate skin conditions (such as acne, eczema or psoriasis) by increasing cortisol levels. By including such herbs that indirectly reduces stress, the formulation might contribute to improved skin health by potentially lowering stress-induced skin flare-ups.

**➤ Anti-microbial properties:**

Shankpushpi has mild anti-microbial effects, which helps prevent microbial growth.

By providing some level of protection against bacteria and fungi, the cream can help in prevention of skin infection or aid in controlling minor skin conditions caused by microbes.

**➤ Skin tone & brightening:**

Traditional uses of shankpushpi involve its role in improving skin complexion.

The antioxidant and regenerative properties may contribute to the reduction of hyperpigmentation and an improvement in overall skin tone, promoting brighter and more-even-toned skin.

**➤ Hydration and moisture retention:**

Shankpushpi is believed to help in water retention within cells.

This can complement the moisturizing effect of the cold cream, helping to maintain hydration and skin elasticity by reducing trans epidermal water loss (TEWL). This makes the skin feel more supple & soft, which is essential for dry and aging skin.

**➤ Anti-aging potential:**

Shankpushpi is rich in bioactive compounds that supports cellular longevity and collagen synthesis.

In topical application, extract can stimulate collagen production, which helps maintain skin elasticity \and firmness. By promoting collagen synthesis and preventing collagen degradation, shankpushpi could play a crucial role in anti-aging formulations, helping to reduce wrinkles, fine lines and sagging skin, making it an ideal active ingredient for targeting aging skin.

**➤ Neuroprotective properties with topical benefits:**

It has well-documented neuroprotective effects, traditionally used to improve memory and reduce stress.

While primarily a systemic benefit, the connection between skin and the nervous system (neuro-immune axis) means that stress reduction can have direct positive effects on skin health. Chronic stress is known to exacerbate various skin conditions, and by reducing stress at the systemic level, shankpushpi can potentially improve conditions such as acne, eczema or psoriasis, indirectly making the skin more resilient and healthier.

**➤ Detoxifying effects:**

It is traditionally known for its detoxifying properties, helping to clear out toxins from the body.

When applied topically, the detoxifying action can help cleanse the skin of pollutants and impurities, supporting the skin's natural detox process. This makes it particularly useful in modern-day skincare, where environmental pollutants (like dust, dirt and smoke) can clog pores and contribute to dull or congested skin.

**➤ Adaptogenic effects on the skin:**

It acts as an adaptogen, helping the body resist various stressors. In skin care, this adaptogenic quality translates into enhanced skin resilience allowing the skin to better withstand environmental stressors like UV radiations, pollutions and temperature changes. This function could



protect the skin from damage and support the skin’s repair mechanisms, promoting healthier, more resilient skin over time.

➤ **UV protection and photo protection:**

Shankpushpi has been shown to possess natural photo protective properties.

It can offer mild protection against UV radiation, reducing the risk of sun damage such as premature aging, hyperpigmentation and even skin cancer.

➤ **Anti-acne properties:**

Due to its anti-inflammatory, anti-microbial and anti-oxidant properties, shankpushpi extract can play a role in preventing and reducing acne.

It can reduce inflammation associated with acne and inhibit the growth of propioni bacterium acnes, the bacteria commonly linked to acne formation. It has ability to regulate sebum formation (due to its adaptogenic properties) further enhances its role in acne management, making it suitable for creams targeting oily and acne-prone skin.

➤ **Scar reduction and tissue remodeling:**

The extract helps in faster wound healing and promotes skin regeneration.

By enhancing collagen production and encouraging cellular turnover, shankpushpi may aid in reducing the appearance of scars, stretch marks or blemishes. Its use in cold cream can thus position the product as an effective solution for people seeking scar reduction, tissue repair, and smoother skin texture.

**Why shankpushpi is the main ingredient: -**

**Multifunctional properties:** it offers a broad range of benefits – anti-inflammatory, antioxidant, anti-aging, wound healing and anti-microbial – making it a versatile powerhouse ingredient.

**Skin health from within:** shankpushpi not only acts on the skin’s surface but also influences underlying processes like stress regulation and skin regeneration offering holistic skin health benefits.

**Natural and traditional appeal:** the long-standing use of shankpushpi in ayurvedic medicine adds an element of tradition and natural efficacy, which can appeal to consumers looking for herbal or ‘clean’ skin care formulations.

**Purpose of the cream:**

**Moisturizer:** The combination of liquid paraffin and water ensures hydration by preventing water loss from the skin. This makes it suitable for people with dry or sensitive skin.

**Skin barrier repair:** The occlusive nature of liquid paraffin helps to restore the skin’s barrier function, which is essential for patients, with compromised or damaged skin (e.g. in conditions like eczema or dermatitis).

**Soothing cream:** The presence of lavender essential oil and shankpushpi extract adds anti-inflammatory and soothing properties making the formulation useful for calming effect irritated or inflamed skin.

**Antioxidant protection:** the shankpushpi extract offers anti-oxidant benefits, protecting the skin from oxidative stress and potential environmental damage.

**Mild antimicrobial activity:** lavender oil may provide some anti-microbial protection, reducing the risk of infection in minor skin conditions.

**Evaluation of cold cream:**

The following several tests were performed to evaluate the quality of cold cream<sup>7</sup>.

- **Morphological evaluation:** This refers to the manual evaluation of the cream’s physical characteristics based on its color, odor, texture, etc.

**Table 3:** Morphological evaluation.

Sr. no.	Parameters	F1C	F2C	F3C	F4C	F5C
1.	Color	Faint yellow	Yellow	white	Light lavender	Lavender
2.	Odor	no odor	No odor	No odor	No odor	Lavender
3.	Texture	Slightly rough	No smooth	smooth	smooth	smooth
4.	State	Semi solid	Semi solid	Semi solid	Semi solid	Semi solid

**Table 4:** Test for spreadability

Formulation	Average spreadability
F1	8
F2	7
F3	6.5
F4	6
F5	5

- **Test for spreadability:** The cream sample was placed in between two glass slides and compacted to a uniform thickness by applying weight for 5 minutes before adding more weight to the weighing pan. The spreadability is measured by the amount of time the upper glass slide travelled across the lower slide.



- **Stability test:** A month-long stability test is conducted on the developed formulation by storing it at various temperatures. While being maintained at various

temperatures, including room temperature and 40°C, the formulation is examined for physical traits such as color, odor, pH, consistency, etc.

**Table 5:** Stability test

Sr. no.	Parameter	F1	F2	F3	F4	F5
1.	Color	Yellow	Yellow	No change	No change	No change
2.	Odor	No change	No change	No change	No change	No change
3.	Texture	Dried	Slightly smooth	Smooth	Smooth	Smooth
4.	pH	No change	No change	No change	No change	No change

- **Irritancy test:** Mark the area (1cm<sup>2</sup>) on the left-hand dorsal surface. Then the cream was applied to the area and the time noted. After interval up to 24hr. it is checked for irritant effect.

**Table 6:** Irritancy test

Sr. no.	Formulation	Irritant effect
1.	F1	Yes
2.	F2	Yes
3.	F3	No
4.	F4	No
5.	F5	No

- **Washability test:** Wash ability test was carried out by applying a small amount of cream on the hand and then washing it with help of tap water.

**Table 7:** Washability test

Sr. no.	Formulation	Wash ability
1.	F1	Not easily washable
2.	F2	Not easily washable
3.	F3	Easily washable
4.	F4	Easily washable
5.	F5	Easily washable

- **Phase separation:** Prepared cream is kept in tightly closed container at room temperature away from sunlight and observed for 24hrs for phase separation.

**Table 8:** Phase separation test

Sr. no.	Formulation	Phase separation
1.	F1	No phase separation
2.	F2	No phase separation
3.	F3	No phase separation
4.	F4	No phase separation
5.	F5	No phase separation

- **pH test:** Take 0.5g of cream and dispersed it in 50ml distilled water. Then check its pH by using digital pH meter.

**Table 9:** pH test

Sr. no.	formulation	pH
1.	F1	7.98
2.	F2	7.96
3.	F3	7.45
4.	F4	7.4
5.	F5	7.3



**FINAL FORMULATION**



TRIAL 1

TRIAL 2

TRIAL 3

TRIAL 4

TRIAL 5

## RESULT

The study successfully formulated a cold cream using shankpushpi flower extract (*Convolvulus prostratus*) and evaluated its phytochemical properties and skincare benefits. The cream was developed with emulsifying wax, liquid paraffin, lavender essential oil, distilled water and shankpushpi extract, offering a balanced emulsion with therapeutic and cosmetic properties.

Phytochemical analysis confirmed the presence of several bioactive compounds, including alkaloids, flavonoids, steroids, etc. these compounds contributed to various benefits such as antioxidant, anti-inflammatory, antimicrobial, wound-healing, and skin-brightening effects. Key tests like Wagner's test, Shinoda test and Salkowski test validated the extract's bioactivity.

The cream exhibited excellent physiochemical properties, including smooth texture, good spreadability and stability. It demonstrated therapeutic potential, reducing inflammation, promoting tissue regeneration, protecting against oxidative damage, and lightening pigmentation. Antimicrobial properties were evident, making it suitable for acne-prone skin.

The formulation is ideal for dry, sensitive or damaged skin due to its hydrating, soothing and protective effects. With its potent bioactive profile, shankpushpi extract serves as a hero ingredient, offering significant advantages in cosmeceutical applications.

This research highlights the potential of shankpushpi-based cold cream as a natural, multifunctional skincare product.

## CONCLUSION

The study highlights the potential of shankpushpi flower extract (*Convolvulus prostratus*) as a natural and effective active ingredient in skincare formulations. The developed cold cream demonstrates excellent stability and user-friendly characteristics, with a smooth texture and favorable pH, making it suitable for all skin types.

The presence of diverse bioactive compounds such as alkaloids, flavonoids, tannins and terpenoids emphasizes the extract's multifunctionality. These compounds collectively contribute to skin repair, hydration and protection against environmental stressors. Additionally, the cream offers soothing properties for irritated skin, promotes tissue regeneration, and helps in reducing visible signs of aging, such as fine lines and hyperpigmentation.

This research provides an innovative approach to integrating traditional medicinal herbs into modern cosmetic formulations. The use of shankpushpi extract in

cream base enhances its accessibility and usability for consumers, providing a natural solution to common skincare issues like acne, dryness and sun damage. Furthermore, the extract's antimicrobial properties address concerns related to skin hygiene, while its antioxidant activity aids in long-term skin health and resilience.

The formulation's reliance on eco-friendly and plant-based ingredients aligns with the global shift toward sustainable and safe cosmetic products.

In conclusion, this cream showcases the therapeutic potential of shankpushpi extract while meeting the growing demand for herbal-based cosmeceuticals.

**Source of Support:** The author(s) received no financial support for the research, authorship, and/or publication of this article

**Conflict of Interest:** The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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