
**BEETROOT POWDER AS A NATURAL ANTIOXIDANT AND
COLORANT IN LIP SCRUB**

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Kasaragod.**Article Received: 27 August 2026, Article Revised: 17 September 2026, Published on: 07 October 2026*****Corresponding Author: Manisha P.**

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Doi: <https://doi-doi.org/101555/ijrpa.6381>**ABSTRACT**

Beta vulgaris L. (Beetroot) is a natural source of betalains, antioxidants, vitamins, minerals, and other bioactive compounds with potential cosmetic benefits. The present study focuses on the preparation and evaluation of beetroot powder as a natural colourant in lip scrub formulation. Fresh beetroot was processed, dried, and finely powdered to obtain a suitable natural colouring material. The prepared beetroot powder was incorporated into a lip scrub formulation along with natural exfoliating, moisturizing, and nourishing ingredients. The formulation was evaluated for appearance, colour, odour, texture, homogeneity, pH, spreadability, washability, exfoliating ability, and stability. The betalain pigments present in beetroot powder are expected to impart a natural reddish-pink colour to the formulation, while its antioxidant constituents may provide additional cosmetic benefits. The study highlights the potential of beetroot powder as a simple, economical, and naturally derived colouring ingredient for cosmetic lip-care applications.

KEYWORDS: Beetroot powder, *Beta vulgaris*, natural colourant, lip scrub and betalain pigments.

INTRODUCTION

In recent years, there has been a significant increase in consumer preference for herbal and natural cosmetic products due to growing awareness about the potential adverse effects

associated with prolonged use of certain synthetic cosmetic ingredients. Synthetic colourants are widely used in cosmetic preparations to improve their visual appearance and attractiveness; however, increasing consumer interest in naturally derived and environmentally friendly ingredients has encouraged researchers and cosmetic manufacturers to explore plant-based alternatives. Natural colourants obtained from fruits, vegetables, flowers, and other plant sources are gaining considerable attention because of their natural origin, availability, and potential antioxidant properties.

Among the various plant materials that can be utilized in cosmetic preparations, beetroot (*Beta vulgaris* L.) has gained interest because of its nutritional, traditional, and potential cosmetic applications. Beetroot contains betalains, including betacyanins and betaxanthins, which are responsible for its characteristic red to purple colour. It also contains vitamins, minerals, phenolic compounds, and other bioactive constituents. The presence of these naturally occurring pigments makes beetroot a promising source of natural colour for cosmetic formulations.

Beetroot powder can be obtained by suitable processing, drying, and pulverization of fresh beetroot. The resulting powder can be incorporated into cosmetic formulations as a naturally derived colouring material. The intensity and uniformity of the colour may depend on factors such as the concentration of beetroot powder, particle size, processing conditions, moisture content, and storage conditions. Appropriate processing and storage are therefore important for maintaining the colour quality and stability of the prepared formulation.

The incorporation of beetroot powder as a natural colourant in a lip scrub may provide an attractive reddish-pink to red colour to the formulation. The naturally occurring betalain pigments can enhance the visual appeal of the product while reducing the dependence on synthetic colouring agents. Beetroot powder can be combined with natural exfoliating and moisturizing ingredients such as Jeerakashala rice powder, sugar, beeswax, castor oil, and vitamin E to obtain a suitable lip-care preparation. The combination of these ingredients may contribute to exfoliation, moisturization, nourishment, consistency, antioxidant protection, and overall acceptability of the formulation.

The present study focuses on the formulation and evaluation of a herbal lip scrub using beetroot powder as a natural colouring ingredient along with Jeerakashala rice powder as the main exfoliating agent. Different formulations may be prepared by varying the concentration of beetroot powder to obtain a suitable colour intensity and uniformity without adversely affecting the texture and other properties of the preparation. The prepared formulations can be evaluated for their appearance, colour, odour, texture, homogeneity, pH, spreadability,

washability, exfoliating ability, lip feel, colour uniformity, and stability. These evaluation parameters help determine the physical quality, performance, and acceptability of the developed formulation.

The development of a beetroot powder-based lip scrub may provide a simple, economical, naturally coloured, and plant-based approach to lip care. It also promotes the utilization of an easily available vegetable source as a value-added cosmetic ingredient and supports the growing interest in naturally derived cosmetic formulations. Therefore, beetroot powder has potential for further investigation as a natural colouring and antioxidant-rich ingredient in herbal lip-care products.

Botanical classification of Beetroot

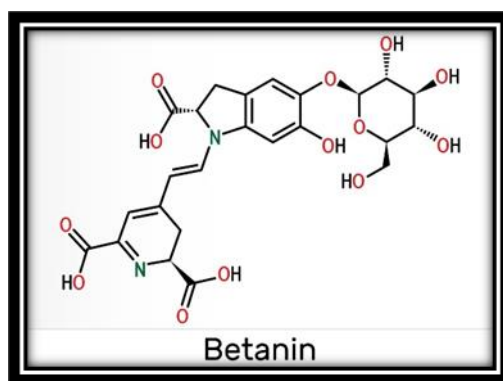
- **Kingdom:** Plantae
- **Division:** Magnoliophyta
- **Class:** Magnoliopsida
- **Order:** Caryophyllales
- **Family:** Amaranthaceae
- **Genus:** *Beta*
- **Species:** *Beta vulgaris* L.



CHEMICAL CONSTITUENTS

Beetroot (*Beta vulgaris* L.) contains several important chemical constituents, particularly betalain pigments, which are responsible for its characteristic red-violet and yellow colour. The major betalains include betacyanins, mainly betanin, and betaxanthins, which contribute to the natural colour of beetroot. It also contains phenolic compounds, flavonoids, ascorbic acid (vitamin C), carotenoids, organic acids, dietary fiber, proteins, and minerals such as

potassium, magnesium, iron, calcium, and phosphorus. Bioactive compounds such as betanin, vulgaxanthin, rutin, and ferulic acid contribute to the antioxidant properties of beetroot. These constituents make beetroot a valuable natural ingredient in cosmetic formulations, particularly lip-care products, where it can function as a natural colourant and antioxidant-rich ingredient.



Beetroot is an edible root vegetable belonging to the family Amaranthaceae. It is widely cultivated and valued for its characteristic deep red-purple colour, nutritional properties, and bioactive compounds. The distinctive colour of beetroot is mainly due to the presence of betalain pigments, particularly betacyanins and betaxanthins.

Beetroot can be processed into beetroot powder by cleaning, slicing, drying, and finely pulverizing the root. The resulting powder can be incorporated into food, pharmaceutical, and cosmetic preparations. Beetroot powder provides a convenient form for incorporation into cosmetic formulations while retaining naturally occurring pigments and other bioactive constituents.

In cosmetic applications, beetroot powder can be used as a natural colouring ingredient in lip scrubs. Its betalain pigments can impart an attractive pinkish-red to reddish-purple colour to the formulation, thereby improving its visual appeal. The antioxidant constituents of beetroot may also provide additional protective benefits. Beetroot powder can be combined with Jeerakashala rice powder, sugar, beeswax, castor oil, and vitamin E to develop a natural lip scrub with exfoliating, moisturizing, conditioning, and colouring properties.

Thus, the incorporation of beetroot powder provides a potential natural and value-added alternative to synthetic colouring agents in herbal and plant-based lip-care formulations.

BOTANICAL DESCRIPTION OF BEETROOT

Beetroot is the swollen underground taproot of *Beta vulgaris* L., belonging to the family Amaranthaceae. It is a biennial herbaceous plant cultivated mainly for its fleshy, edible root. The root is generally globular, oval, or elongated and varies in colour from red and deep purple to reddish-purple depending on the variety. The leaves arise from the crown of the root and are green, broad, and arranged in a basal rosette. The plant produces an erect flowering stem during the second year of growth. Flowers are small and greenish, occurring in clusters, and the fruits are dry and contain the seeds. The characteristic red to purple colour of beetroot is mainly due to betalain pigments, particularly betacyanins and betaxanthins.

STORAGE CONDITIONS

Store beetroot powder in a cool, dry place in an airtight, moisture-resistant container. Protect from direct sunlight, excessive heat, humidity, and moisture to help preserve its natural colour and prevent deterioration.

CONCLUSION

Beetroot powder (*Beta vulgaris* L.) is a naturally derived plant ingredient with significant nutritional, antioxidant, and cosmetic potential. Its characteristic red to reddish-purple colour is mainly due to the presence of betalain pigments, particularly betacyanins and betaxanthins, making it a useful natural colouring material. Beetroot powder can be explored as a natural colourant in herbal lip scrub formulations, where it enhances the appearance and attractiveness of the product.

The incorporation of beetroot powder along with Jeerakashala rice powder, sugar, beeswax, castor oil, and vitamin E can provide a combination of exfoliating, moisturizing, conditioning, antioxidant, and colouring properties. The use of beetroot powder may provide a natural and economical alternative to synthetic colouring agents in lip-care products. Further research and standardization are required to establish its optimum concentration, colour stability, formulation compatibility, safety, and long-term stability in lip scrub preparations.

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