

A Physiological Review on Cosmeceutical Effects of *Madhuka* (*Glycyrrhiza Glabra* Linn) w.r.t. *Varnya* Property

Dr. Bhavya Pandey¹, Prof. (Dr.) Srikanta Kumar Panda²

¹ MD Scholar, PG Department of Kriya Sharira, Ayurvedic and Unani Tibbia College, New Delhi

² Professor, PG Department of Kriya Sharira, Ayurvedic and Unani Tibbia College, New Delhi

Corresponding Author: Dr. Bhavya Pandey

DOI: <https://doi.org/10.52403/ijhsr.20250113>

ABSTRACT

The previous century has seen a rise in the priority placed on appearance, which has resulted in the development of sophisticated cosmetic products with high—almost pharmaceutical—efficacy, sensory advantages, and safety claims. When these products—commonly referred to as cosmeceuticals—are applied to human skin, it appears healthier and younger. Additionally, because of their many positive effects on human skin, as well as customer preferences for natural skincare, products originating from natural sources, such plants, are particularly in demand. In ayurveda skin tone is referred as *Varna*. Whereas *Varnya* is a traditional term used to preserve and restore the skin's natural tone and texture. Chapter 4 of *Charaka Sutras* than describes *Varnya Maha Kashaya*, the eighth category of 50 *Maha Kashaya*, which comprises ten drugs and *Madhuka* is one of them. According to ayurveda *Madhuka* is *Madhur Rasa*, *Sheeta Virya* and *Madhur Vipaka*. Due to all these properties, it acts as *Varnya* (Complexion Enhancing or Skin Rejuvenating), *Raktaprasadaka* (Blood Purifying or Blood Detoxifying), *Vataghna* (Vata Reducing or Vata Pacifying), *Pittaghna* (Pitta Reducing or Pitta Pacifying) and *Ojovardhaka* (Oja Enhancing or Vitality Boosting), which leads to improved skin complexion. Research have proved anti-inflammatory and antioxidant activity of *Varnya Mahakshya*. In accordance with the various research, liquorice (*Glycyrrhiza Glabra*) is found to exhibit 1. Anti tyrosinase. 2. photoprotective 3. Haircare 4. Anti-wrinkle. 5. Photoaging and 6. Antioxidant properties. Hence, useful in providing fairer skin. A study also proved *Madhuka* as a useful aspect of *Dincharya* by significantly enhancing complexion of the participants. According to Ayurveda, *Bhrajaka pitta*, *Rakta*, and *Vata* are all equally accountable for skin tone. Additionally, the medications stated in *Varnya Maha Kashaya* work on all these elements because of their fundamental qualities.

Keywords: *Madhuka*, *Varnya*, Cosmeceutical, Liquorice

INTRODUCTION

Skin is the body's largest organ, performing over 20 essential functions, including protection from environmental damage, temperature regulation, pain detection, and fluid balance. It also aids in vitamin D production and plays a role in endocrine functions. Skin care products are designed to

enhance these protective functions and address aging and skin conditions. Natural ingredients have long been used to treat skin conditions, and growing consumer concerns about chemicals have boosted their use in modern formulations¹. The rise of cosmeceuticals—sophisticated beauty products with pharmaceutical-like

efficacy—reflects the increasing importance of appearance. Products derived from plants are especially popular for their natural appeal and skin benefits². *Varna*, a Sanskrit word meaning "color," refers to the natural color and texture of the skin. In Ayurveda, "*Varnya*" is a drug that improves skin appearance. Ayurveda focuses on illness prevention and cure, with *Charaka Samhita*, its primary text, listing 10 medicinal plants (drugs) called *Varnya Maha Kashaya*, known for promoting radiant skin. As per Ayurveda the seven layers of skin are *Avabhasini, Lohita, Shweta, Tamra, Vedini, Rohini, and Mamsadhara*. These layers are accountable for the many characteristics of the skin, such as its complexion, and the skin's close companion *Bhrajak Pitta* is likewise accountable for the skin's complexion. According to *Acharya Charaka* and *Acharya Shushruta* the first layer of skin i.e. *Avabhasini and Udakdhara* define skin color respectively. *Bhrajaka Pitta* is situated under the skin. *Rakta Dhatu* is responsible for the formation of skin as per definition of *twacha* mentioned in *Shushruta Samhita*. *Vata* is responsible for skin darkening. Therefore, it can be said that *Bhrajaka Pitta, Rakta* and *Vata* are equally responsible for skin complexion as per Ayurveda. And due to their inherent properties' drugs mentioned in *Varnya Maha Kashaya* act on all these factors³.

MATERIALS & METHODS

Literature and references related to the proposed title are collected from classical texts of *Ayurveda* and contemporary literature. Various publications, research papers, references from internet related to topic have been considered.

LITERATURE REVIEW

Cosmeceuticals have revolutionized the global personal care industry. Coined in 1984 by Dr. Albert Kligman of the University of Pennsylvania, the term defines a unique category blending the properties of *cosmetics*

and *pharmaceuticals*. Cosmeceuticals are widely recognized for delivering pharmaceutical-like therapeutic benefits, though not necessarily achieving biological therapeutic effects.⁴

The *Charak Samhita*, a foundational text in Ayurveda, describes a group of 10 medicinal plants known as *Varnya Maha Kashaya*, renowned for their ability to enhance skin radiance. These plants include:

- Shweta Chandan (*Santalum album*),
- Nagakeshar (*Mesua ferrea*),
- Padmak (*Prunus cerasoides*),
- Ushira (*Vetiveria zizanioides*),
- Madhuka (*Glycyrrhiza glabra*),
- Manjishtha (*Rubia cordifolia*),
- Sariva (*Hemidesmus indicus*),
- Payasya (*Ipomoea digitata*),
- Sita (white variety of *Cynodon dactylon*), and
- Lata (green variety of *Cynodon dactylon*).

They can be used individually or in combination, both internally and externally, to promote glowing skin.⁵ All of them work under *varnya, raktashodhak, pittashamak, kushthaghna guna*. Most of them are prescribed for skin diseases, the pharmacological properties of these herbs signify complexion enhancing properties.⁶ The genus *Glycyrrhiza*, belonging to the Leguminosae (or Fabaceae) family, comprises over thirty species distributed worldwide. Its name originates from the Greek words *glykys* (meaning sweet) and *rhiza* (meaning root).⁷

Cosmeceutical effects of glycyrrhiza are ⁸

1. Anti-tyrosinase
2. photoprotective
3. Haircare
4. Anti-wrinkle
5. Photoaging
6. Antioxidant

Some of the key studies conducted on liquorice extracts for evaluating cosmeceutical effects are:

Activity	Compound	Concentration and time	Method	Result	Reference
1. Anti-tyrosinase Activity	Glabridin; glabrene; isoliquiritigenin	0.7 μ M (glabridin), 7 μ M (glabrene), and 26 μ M (isoliquiritigenin)	In vitro— human melanocyte (G361)	Suppression of melanin production driven by tyrosinase activity.	(Parvez, Kang, Chung, & Bae, 2007) ⁹
2. Photoprotective	glycyrrhizin (GL), 18 β -glycyrrhetic acid (18 β -GA) and glabridin (GLB)	GL (30 μ M), 18 β -GA (30 μ M) or GLB (15 μ M)	The MTT assay was used to evaluate cell viability, while DNA damage was assessed through a comet assay. Intracellular reactive oxygen species (ROS) levels were measured using the fluorescent 2'7'-dichlorodihydrofluorescein diacetate assay. Additionally, Western blot analysis was performed to examine the activation of p53, the regulation of BCL-2, and the cleavage of PARP.	Treating human keratinocytes with 18 β -GA and GLB protected against both direct and indirect DNA damage, thereby preventing the activation of apoptosis.	(Veratti et al., 2011) ¹⁰
3. Antioxidant	Glycyrrhetic acid; glabridin	0–120 μ M	A study performed in vivo utilizing Wistar albino rats.	Inhibition of oxidative DNA fragmentation and suppression of proteins linked to apoptosis activation in human keratinocytes.	(Grippaudo & Di Russo, 2016) ¹¹
4. Haircare	Liquorice hydro-alcoholic extract	1–2%	An in vivo study conducted using Wistar albino rats.	Enhancement of hair growth activity.	(Veratti et al., 2011) ¹⁰
5. skin clearing effects	Glycyrrhizinic acid	20%,	A double-blind clinical trial conducted on human participants in vivo.	Decrease in erythema, swelling, and itching severity scores.	(Halder & Richards, 2004) ¹³

A study also proved yasthimadhu churna application with honey on face as a useful Aspect of dincharya¹⁴

DISCUSSION

Essence of, *Varnya* activities in Ayurveda are integral for maintaining a radiant, healthy complexion by promoting internal balance,

detoxification, nourishment, and stress reduction. These activities not only contribute to a beautiful appearance but also support overall health and wellness. Following points tends to correlate and comprehend the physiological aspects of *Varnya* property of *Madhuka* in ayurveda in accordance with modern science.

Varnya Activity exhibited by <i>Madhuka</i>	Mechanism of Action	Ayurveda perspective regarding the particular <i>Varnya</i> activity
1. Anti-tyrosinase Activity	Tyrosinase is a copper-dependent enzyme that initiates melanin production in the skin. It converts L-tyrosine to melanin through a series of reactions. Tyrosinase inhibitors are commonly used in skincare products to reduce hyperpigmentation. Glycyrrhiza Glabra (liquorice) extracts have been shown to inhibit this enzyme, thereby helping to reduce melanin production and lighten the skin.	Bhrajaka Pitta, located in the skin, regulates body temperature and skin color. The pituitary gland secretes MSH, which controls melanin production in the melanocytes of the epidermis, the seat of Bhrajaka Pitta. Therefore, the anti-tyrosinase activity of <i>Madhuka</i> can be linked to the modulation of Bhrajaka Pitta.
3. Haircare	Liquorice is known to enhance hair health by improving hair diameter, scalp moisture, and conditions like dandruff. Its extracts also promote hair growth and reduce hair fall, acting as a tonic for the scalp and helping with dandruff.	Hair loss is caused by dry, itchy cracks on the scalp due to imbalanced Kapha and Vayu. Pitta also becomes deranged, leading to Darunaka, where Kapha, Vata, Pitta, and Rakta are affected. <i>Madhuka</i> impacts all these doshas, offering a therapeutic effect.
4. Anti-wrinkle and photoprotective property and antioxidant activity.	Liquorice extract-based formulations, rich in antioxidants, are valuable in dermal and cosmetic products for skin depigmentation, preventing oxidative stress, and maintaining skin homeostasis. They offer photoprotection against UV-A and UV-B rays, safeguarding against photoaging and photo carcinogenesis. Intrinsic aging, caused by a decrease in collagen, elastin, and hyaluronic acid, leads to wrinkles, skin laxity, dullness, and discoloration. Extrinsic factors, like UV exposure, accelerate aging by increasing reactive oxygen species (ROS) and activating matrix metalloproteinases (MMPs), particularly MMP-2 and MMP-9, which break down collagen and disrupt the extracellular matrix.	Charaka describes six layers of the skin, with the first two—Udakadara and Astrikdhara—being the outermost. Sushruta defines seven skin layers, including the innermost Mamsadhara, which is key to skin stability and suppleness. The outermost layer, Avabhasini, reflects overall health and balances the body's physiology. Vata skin types develop wrinkles sooner. Pitta skin, being photosensitive, is more prone to sun damage. Kapha skin is thicker, oily, and ages slower but may accumulate toxins. Yasthimadhu helps balance all three doshas, enhancing the anti-wrinkle properties of the Mamsadhara layer.

CONCLUSION

Comprehending the concept of each "*Mahakshaya*" in Ayurveda is crucial, as it paves the way for a better lifestyle and effective treatments for various disorders that are either neglected by modern medicine or not commonly addressed by Ayurveda today. If the understanding of all *Mahakshayas* is

decoded, it could significantly contribute to the future of Ayurveda. This approach would be especially impactful in areas like skin health, such as the "*Varnya*" activity of a drug, which plays a key role in promoting glowing and healthy skin. By integrating these traditional principles into modern practices, Ayurveda can offer innovative

solutions for skin care and beyond.

Declaration by Authors

Ethical Approval: None

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Draelos ZD, Kligman A. The future of cosmeceuticals: an interview with Albert Kligman, MD, PhD. *Dermatol Surg.* 2005 Jul;31(7 Pt 2):890-1.
2. Yahya NA, Attan N, Wahab RA. An overview of cosmeceuticals relevant plant extracts and strategies for extraction of plant-based bioactive compounds. *Food Bioprod Process.* 2018; 112:69-85. doi: 10.1016/j.fbp.2018.09.002.
3. Parde PR, Jaiswal SK, Jaiswal MS. The role of Charakokta *Varnya* Mahakashaya for maintenance of skin complexion (*Varnya Vriddhi*) – a literature review. *Ayurline: Int J Res Indian Med.* 2021;2.
4. Brandt FS, Cazzaniga A, Hann M. Cosmeceuticals: current trends and market analysis. *Semin Cutan Med Surg.* 2011 Sep;30(3):141-3.
5. Charak Acharya, *Charaksamhita* of Agnivesha, edited with *Vaidyamanorama* by Acharya Vidyadhar Shukla, Prof. Ravi Dutt Tripathi; foreword by Acharya Priy Vrata Sharma. Varanasi: Chaukhamba Sanskrit Sansthan; 2013. *Sutrasthan shloka:* 4/8.
6. Parde PR, Jaiswal SK, Jaiswal MS. The role of Charakokta *Varnya* Mahakashaya for maintenance of skin complexion (*Varnya Vriddhi*) – a literature review. 2021.
7. Batiha GE, Beshbishy AM, El-Mleeh A, Abdel-Daim MM, Devkota HP. Traditional uses, bioactive chemical constituents, and pharmacological and toxicological activities of *Glycyrrhiza glabra* L. (Fabaceae). *Biomolecules.* 2020; 10:352. doi: 10.3390/biom10020352.
8. Pastorino G, Cornara L, Soares S, Rodrigues F, Oliveira M. Liquorice (*Glycyrrhiza glabra*): A phytochemical and pharmacological review. *Phytother Res.* 2018; 32:2323-2339. doi: 10.1002/ptr.6201.
9. Parvez S, Kang M, Chung HS, Bae H. Naturally occurring tyrosinase inhibitors: mechanism and applications in skin health, cosmetics and agriculture industries. *Phytother Res.* 2007 Sep;21(9):805-16. doi: 10.1002/ptr.2184. PMID: 17605157.
10. Veratti E, Rossi T, Giudice S, Benassi L, Bertazzoni G, Morini D, et al. 18 β -Glycyrrhetic acid and glabridin prevent oxidative DNA fragmentation in UVB-irradiated human keratinocyte cultures. *Anticancer Res.* 2011;31(6):2209-15.
11. Grippaudo FR, Di Russo PP. Effects of topical application of B-Resorcinol and Glycyrrhetic acid monotherapy and in combination with fractional CO₂ laser treatment for benign hand hyperpigmentation treatment. *J Cosmet Dermatol.* 2016 Dec;15(4):413-419. doi: 10.1111/jocd.12241. Epub 2016 Jun 21. PMID: 27325103.
12. Halder RM, Richards GM. Topical agents used in the management of hyperpigmentation. *Skin Therapy Lett.* 2004 Jun-Jul;9(6):1-3. PMID: 15334278.
13. Parle A, Chitrakar M, Hadke A. Effect of *Yashtimadhu* (*Glycyrrhiza glabra*) Churna *Mukhalepa* with honey as an *Upakrama* of *Dinacharya* (daily regimen practice) w.s.r. to *Varnya* (complexion). *Int J Ayu Pharm Res.* 2017 Nov 8;5(10).

How to cite this article: Bhavya Pandey, Srikanta Kumar Panda. A physiological review on cosmeceutical effects of *Madhuka* (*glycyrrhiza glabra* linn) w.r.t. *Varnya* property. *Int J Health Sci Res.* 2025; 15(1):92-96. DOI: <https://doi.org/10.52403/ijhsr.20250113>
