ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 1| January 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

NUTMEG IN SKINCARE: EXPLORING ITS COSMETIC BENEFITS AND APPLICATIONS

Khushbu B. Patel[*], Riddhi D. Bhandari[1], Lavanya Nair[2], Afifa Saiyed[3]

[,1,2] -Assistant Professor (Pharmaceutical Quality Assurance) Smt. B.N.B Swaminarayan Pharmacy, Salvav Vapi. 396191*
[3]- Student at Smt. B.N.B Swaminarayan Pharmacy, Salvav Vapi. 396191

**Khushbu Bharatbhai Patel,Smt. B.N.B Swaminarayan Pharmacy College, Vapi,Shree Swaminarayan Gurukul, N.H. No. 48, Salvav-Vapi-Dist. Valsad, Gujarat-396191*

ABSTRACT

Nutmeg—which comes from the seed of the Myristica fragrans plant—has been utilized in both traditional medicine and cooking. Recent research has shown that it may have cosmetic benefits, which calls for more investigation. This review highlights the most recent research on nutmeg's cosmetic impacts, emphasizing its: - Antioxidant and anti-inflammatory qualities, which may shield the skin from harm and encourage the appearance of younger skin; - Antimicrobial action, which may help reduce skin irritations and fight germs that cause acne. Naturally occurring astringent qualities that could help constrict skin pores and lessen the visibility of wrinkles and fine lines - capacity to even out skin tone and lessen hyper pigmentation; - possibility to encourage hair development and enhance the scalp.

KEYWORDS: *Myristica fragrans, Antioxidant, Nutmeg, Antibacterial*

INTRODUCTION

The Myristica fragrance Houtt, also called "Nutmeg" or "mace" to the family Myristicacea. The Myristica fragrance fruits has two parts, the shelled seed, which is flesh, and the red aril, which is mace, that surrounds the seed, which has a unique fragrance and a slight sweet, warm taste. The seed of this family has an inner red-brown kernel called Nutmeg, and the outer ariles are known as Mace.[(Ashokkumar, Simal-Gandara, Murugan, Dhanya, & Pandian, 2022)] Typically, seeds have an oil content of more than 60%. Nutmeg contains psychoactive a variety of chemicals including myristicin, elemicin, eugenol and safrole which are thought to be responsible for its psychoactive properties.[(Asgarpanah & Kazemivash, 2012)] Nutmeg intoxication causes a variety of CNS effects including hallucinations, confusion, drowsiness and incoherent speech. Nutmeg seeds have been reported to have potent antimicrobial properties against a wide range of various bacteria and fungi, thus showing potential for combacting microbial infections and promoting overall health.[(Ha et al., 2020)] The Appearance of nutmeg seed is shown in fig 1.1.

History

The nutmeg was discovered in 1512 by the Portuguese and originated in the Banda Islands of Indonesia. After the Dutch propagated its importance, the name nutmeg comes for a Latin word "nux Muscata" which means "Musky nut".

In 1774, the Dutch botanist Maartyn Houttuyn gives the name Myristica fragrance, which is a binomial name. It has previously been described, among others, by Georg Eberhard Rumphius[(Ashokkumar et al., 2022)].

Biological source

Nutmeg is the seed of the genus Myristica fragrans, which is a dark-leaved evergreen tree that is harvested by extracting two species from its fruit: mace, from the seed covering, and nutmeg, from its seed.The Banda Islands in Indonesia's Moluccas, often known as the Spice Islands, are home to the nutmeg plant. Another area in Malaysia that is well-known for its cultivation is Penang Island[(Sasikumar, 2021)].

Microscopy

In accordance with recommendation THP2022, the macroscopic features of real M. fragrans and commercial nutmeg samples, including arils and seeds, were evaluated with respect to their size, odor, and external appearance. In particular, the arils appeared as flattened, broken, yellowish-brown to brownish portions that smell strongly. On the other hand, the seeds varied in shape from oval to globose, with a brownish color and a strong smell as shown in Fig 1.2.[(Khamnuan et al., 2023)]

Nutritional value

Though nutmeg is used sparingly in dishes, it still impacts health in many ways with its high nutritive contents like vitamins, minerals, and organic compounds related to essential oils. According to the USDA National Nutrient Database, these beneficial components include dietary fiber, manganese, thiamin, vitamin B6, folate, magnesium, and copper.[(Okiki, Nwobi, Akpor, Adewole, & Agbana, 2023)]

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 1| January 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

Chemical Composition

The seed contains about 10% essential oil , which is mostly composed of terpene hydrocarbons (a-pinenes, camphene, p-cymene, sabinene, bphellandrene, g-terpinene, limonene, myrcene (60% to 90%), terpene derivatives (linalool, geraniol, terpineol, - 5% to 15%), and phenylpropanes (myristicin, elemicin, safrole, 2% to 20%)[(Maya, Zachariah, & Krishnamoorthy, 2004)]. The presence of myristicin and elemicin, in the seed of M. fragrans is one of the reasons for its intoxicating effects. [(Warsito, 2021)]

Cosmetic Values

Nutmeg has some potential benefits for the skin, such as having antibacterial and anti-inflammatory properties. It consists of the most important chemical constitutes. Nutmeg seed contains essential oil, fatty oils, resins, wax, and other components.[(Kuete, 2017)] The essential oil yield of Myristica fragrance of leaves 0.7-3.2, mace 8.1-10.3, seed 0.3-12.5, kernel 6.2-7.6%. The major chemical constitute of MFEO are myristicin, eugenol, sabinene, β-myrcene, and α- pinene, limonene, and safrole. Techniques were used to extract the MFEO Hydro distillation, steam distillation, and supercritical pharmacological Actions which are anticancer, antidepressant, ant diabetic, ant obesity, anti-inflammatory, analgesic, antimicrobial, antioxidant, Hepatoprotective, anticonvulsant and memory enhancing.[(Nagja, Vimal, & Sanjeev, 2016)]

Pharmacological Use:[(Asgarpanah & Kazemivash, 2012),(Gupta, 2020)]

Antioxidant Activity

- Nutmeg is packed with powerful antioxidants, including phenolic compounds, essential oils, and plant pigments like cyanidins. These antioxidants play a crucial role in protecting the body from oxidative stress.
- By neutralizing free radicals, nutmeg helps maintain cellular health and reduces inflammation.

Antimicrobial Activity

- The essential oil and different extracts of aromatic plants have shown strong antimicrobial activity against variety of fungi as well as bacteria.
- It can be used to treat acne, eczema, and other skin conditions. Nutmeg helps reduce inflammation and redness, while its antibacterial properties combat the bacteria that cause acne.

Anti-inflammatory activity

Anti-inflammatory activity is shown only by petroleum ether extracts.

GEOGRAPHIC DISTRIBUTION, COLLECTION & CULTIVATION

Ecological parameter for production of nutmeg is hot, humid climate without a noticeable dry season. The average annual production worldwide is estimated to be between 10,000 and 12,000 tons, while the yearly requirement is estimated to be 9,000 tons. Due to their respective shares of 20% and 75% of the global nutmeg market, Grenada and Indonesia control the product's production and transportation.[(Verma, Singh, & Maurya, 2021)]

The production of nutmeg is distributed geographically, with Asia particularly Southeast Asia producing more than half of the world's nutmeg. This has increased demand even more because people are becoming more and more interested in spices and herbs that may have health-promoting qualities.[(Somani, Karve, Jain, Jain, & Singhai, 2008)]

Essential oils found in nutmeg seeds give the spice its distinct flavor and aroma. The main ingredients in these essential oils are substances like myristicin, elemicin, safrole, and eugenol, all of which add to the distinct flavor of nutmeg. Nutmeg contains important nutrients such as dietary fiber, carbs, lipids, and proteins in addition to these aromatic components.[(Putra et al., 2024)] Its increased nutritional value makes it more appealing not just as a flavoring agent but also as a source of energy and sustenance.

PHYTOCONSTITUENTS

Phytoconstituents of nutmeg are mention in Table 1.1.

COSMETIC USES

Skin Care

- Nutmeg is used in a variety of skincare products, including face masks, scrubs, serums, body lotions, and exfoliating masks. Nutmeg can help with:
- Skin tone: Nutmeg can improve the appearance of uneven skin tone, dark spots, and hyper pigmentation. It can also reduce redness and irritation, making it good for sensitive skin.[(Krishnan, Afsal, Jamal, Rasheed, & PP, 2022)]
- Acne: Nutmeg's antibacterial properties can help fight acne and the bacteria that causes it. Nutmeg oil can also help remove whiteheads and blackheads and reduce the appearance of acne.
- Skin texture: Nutmeg can help improve the appearance of fine lines and wrinkles. It can also balance oily skin by tightening pores and exfoliating.[(More et al., 2023)]
- Scars: Nutmeg has curative properties that can help heal scars caused by acne and sun spots.
- Relieves Itching and swelling: The anti-inflammatory properties of nutmeg help to reduce redness, swelling, and itching associated with these conditions.[(Yamini & Onesimus, 2013)]
- Brightens the skin: Nutmeg has been shown to improve skin tone and give the skin a brighter, more youthful appearance. This is due to the fact that nutmeg is rich in vitamin C, which is known for its skin brightening properties. Vitamin C helps to boost collagen production, which in turn helps to firm and tighten the skin, giving it a more youthful appearance.[(Koli, Mane, Kumbhar, & Shaha, 2016)]

Hair

- Nutmeg's antimicrobial properties can help keep the scalp clean and prevent dandruff, which can help prevent hair loss and promote healthy hair growth.
- It is high in calcium, magnesium, iron, and vitamins B and C, which can all be beneficial for the scalp and hair.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 1| January 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

- The antioxidant properties of the oil can also help to strengthen follicles, which may also be able to stimulate growth.
- The key lies in its ability to regulate blood circulation to promote healthy hair and reduce hair fall.
- A good method is to create a hair mask that includes nutmeg essential oil and massage into your hair.[(Ashokkumar et al., 2022)]

ADVERSE EFFECT

No such Adverse effect are likely to poses/reported on cosmetic use of Nutmeg.

MARKETED FORMULATION:

Available Marketed formulation of Nutmeg are mention in Table 1.2[()]

HOME MADE REMEDIES: [()]

Nutmeg and Honey Pack

- Take 1 teaspoon of Nutmeg powder and 1 tablespoon of Honey and mix uniformly to form a thick paste.
- Apply this mixture to your face, leave it on for 15-20 minutes, and then rinse off with lukewarm water.
- This pack helps in moisturizing the skin, reducing redness and inflammation, and improving the skin's texture.
- It's suitable for oily skin types.

Nutmeg and Yogurt Pack

- Take 1 teaspoon of Nutmeg powder and 1 tablespoon of plain Yogurt, mix uniformly to form a thick paste
- Apply the mixture to your face and let it sit for 15-20 minutes before rinsing it off with lukewarm water.
- This pack helps in brightening the skin, reducing dark spots, and nourishing the skin.

Nutmeg and Lemon Pack

- Take 1 teaspoon of Nutmeg powder and 1 teaspoon of Lemon juice, mix uniformly to form a thick paste
- Apply the mixture to your face and keep it on for 15-20 minutes before rinsing it off with lukewarm water.
- This pack helps in reducing pigmentation, lightening dark circles, and improving the overall complexion.

Nutmeg and Milk Pack

- Take 1 teaspoon of Nutmeg powder and 1 tablespoon of Milk, mix uniformly to form a thick paste.
- Apply the face pack to your face and let it dry for 15-20 minutes before rinsing it off with lukewarm water.
- This pack helps in hydration, nourishment, and improves skin elasticity.

Nutmeg and Cinnamon Pack

- Take 1 teaspoon of Nutmeg powder and 1 teaspoon of Cinnamon powder and add water to make paste
- Apply the mixture to your face and keep it on for 15-20 minutes before rinsing it off with lukewarm water.
- This pack helps in reducing acne, fighting bacteria, and improving the overall skin tone.

Nutmeg and Turmeric Pack

- Take 1 teaspoon of Nutmeg powder and 1 teaspoon of Turmeric powder and add water to make paste
- Apply the mixture to your face and keep it on for 15-20 minutes before rinsing it off with lukewarm water.
- This pack helps in reducing acne, fighting bacteria, and nourish the skin.

FIGURES

CONCLUSION

By studying above review we conclude that the Myristica Fragrance is one of the useful herbal medicinal product which is use in various cosmetic product. Due to presence of two important part in Myristica fragrance i.e. 'Nutmeg' and 'Mace, which consists of various chemical constituents and essential oils that includes are myristicin, elemicin, safrole, terpinene , limonene, myrcene, etc. Due to which various pharmacological activities like antibacterial action, anti-inflammatory action, anti-oxidant action ,anti-microbial action are observed. Nutmeg is a powerful ingredient that possesses many qualities. It can be a spice, a medicine, and can be a drug at some point and most important it has various cosmetic values. Nutmeg's oil has its existence because of its texture and essence. Its herbal face cream is a skincare item that provide positive skincare effect which nourish the skin, keep it hydrated, and encourage a more even complexation. Its face serum posses relaxing and anti-inflammatory effect which may be able to calm sensitive skin and lesson redness. soap has also many cosmetic values. Even nutmeg powder can be use for many face problem like to remove acne, dark spot reduction and many more. Chemicals present in nutmeg has its significance and properties. Nutmeg has a complexity of many chemicals. Together, at some point nutmeg can be useful with the appropriate quantity. It also has medical properties like antibacterial, antimicrobial, anti-inflammatory, etc.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 1| January 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188



Fig.1.1 Nutmeg

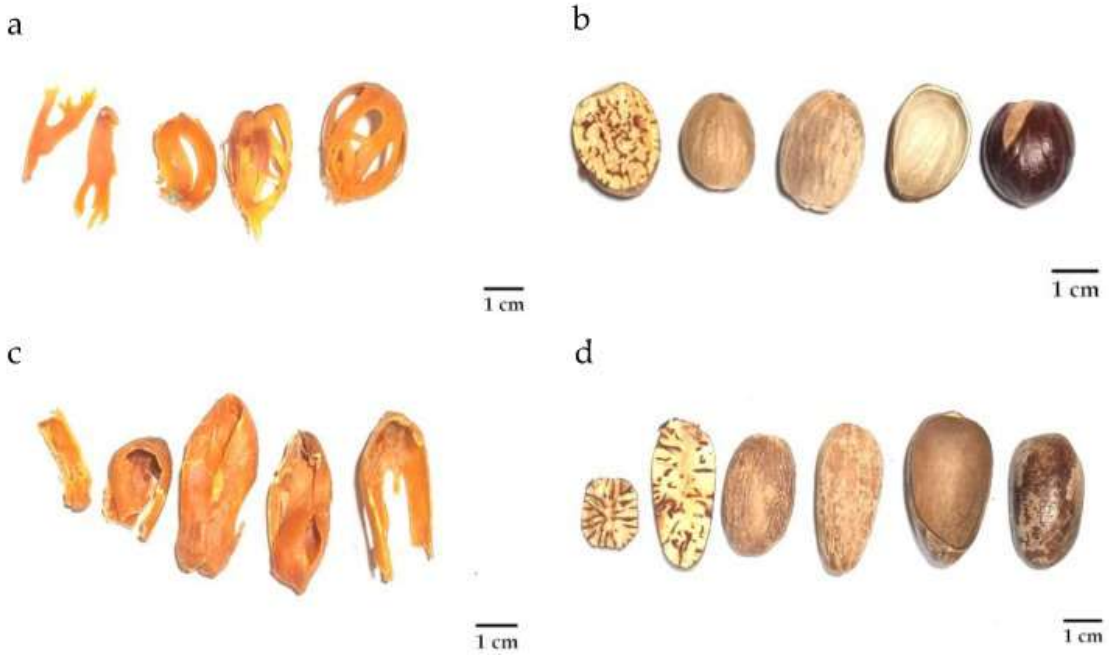


Fig 1.2 Macroscopic features of nutmeg arils and seeds divided in two groups: globose (a,b) and oval-shaped groups (c,d).

Table no 1.1 Phytoconstituents of nutmeg

Sr. No.	Constituents	Compound
1.	Essential oils (5-15% Volatile oil)	Major: sabinene, α-pinene, and β-pinene, myristicin, safrole, and eugenol.
		Minor: terpinen-4-ol, copaene, γ-asarone, β-phellandrene, etc.
2.	Secondary metabolites	Lignans
3.	Other compounds	licarin, neolignan, verrucosin, nectandrin, elemicin, isoelemicin, surinamensin, methoxylicarin A, malabaricone, myrislignan, dihydro-benzofuran.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 1| January 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

Table 1.2 Marketed Formulation of Nutmeg

Sr. No	Type	Brand Name	Company Name	Dose	Prize
1.	Soap	Kama Ayurveda Nutmeg, Ginger & Lime Soap	Kama Ayurveda	125 g	120/-
2.	Lotion	Kama Ayurveda Natural Sun Protection	Kama Ayurveda	1.76 fl oz	185/-
3.	Serum	iCUC Nutmeg Skin Rejuvenating Face Serum	I Care U Care	1.01 fl oz	1,099/-
4.	Oil	Nutmeg Essential oil	salvia	0.50 oz	231/-
5.	Face wash	• DevElixir Natural Cosmetics	Dev Elixir	3.52 oz	-
6.	Oil	Edens garden Nutmeg esstential oil	Edens garden	0.33fl oz	671/-

REFERENCES

1. *(30 August 2024). from https://www.kamaayurveda.in/blog/nutmeg-for-skin?srsltid=AfmBOoqi2JS0_6kzrytjImZpqTshLSLzrC4XnDM-6WZhlbMap6Ggcsh1*
2. *Asgarpanah, J., & Kazemivash, N. (2012). Phytochemistry and pharmacologic properties of Myristica fragrans Hoyutt.: A review. African Journal of Biotechnology, 11(65), 12787-12793.*
3. *Ashokkumar, K., Simal-Gandara, J., Murugan, M., Dhanya, M. K., & Pandian, A. (2022). Nutmeg (Myristica fragrans Houtt.) essential oil: A review on its composition, biological, and pharmacological activities. Phytotherapy Research, 36(7), 2839-2851.*
4. *Gupta, E. (2020). Elucidating the phytochemical and pharmacological potential of Myristica fragrans (nutmeg) Ethnopharmacological investigation of Indian spices (pp. 52-61): IGI global.*
5. *Ha, M. T., Vu, N. K., Tran, T. H., Kim, J. A., Woo, M. H., & Min, B. S. (2020). Phytochemical and pharmacological properties of Myristica fragrans Houtt.: an updated review. Archives of Pharmacal Research, 43, 1067-1092.*
6. *Khamnuan, S., Phrutivorapongkul, A., Pitchakarn, P., Buacheen, P., Karinchai, J., Chittasupho, C., . . . Intharuksa, A. (2023). The Identification and Cytotoxic Evaluation of Nutmeg (Myristica fragrans Houtt.) and Its Substituents. Foods, 12(23), 4211.*
7. *Koli, D. S., Mane, A. N., Kumbhar, V. B., & Shaha, K. S. (2016). Formulation & evaluation of herbal anti-acne face wash. World J. Pharm. Pharm. Sci, 5(6), 2001-2200.*
8. *Krishnan, N., Afsal, V. I., Jamal, F., Rasheed, R., & PP, S. S. (2022). FORMULATION AND EVALUTION OF HERBAL VANISHING CREAM.*
9. *Kuete, V. (2017). Myristica fragrans: A review. Medicinal spices and vegetables from Africa, 497-512.*
10. *Maya, K., Zachariah, T. J., & Krishnamoorthy, B. (2004). Chemical composition of essential oil of nutmeg (Myristica fragrans Houtt.) accessions.*
11. *More, P., Kulkurni, A., Pawar, R., Kamble, R., Apshingekar, A., & Jaybhaye, N. (2023). FORMULATION AND EVALUATION OF HERBAL FACE WASH OF PIPER BETEL. Russian Law Journal, 11(5), 1208-1219.*
12. *Nagja, T., Vimal, K., & Sanjeev, A. (2016). Myristica fragrans: a comprehensive review. Int J Pharm Pharm Sci, 8(2), 27-30.*
13. *Okiki, P. A., Nwobi, C. P., Akpor, O. B., Adewole, E., & Agbana, R. D. (2023). Assessment of nutritional and medicinal properties of nutmeg. Scientific African, 19, e01548.*
14. *Putra, N. R., Aziz, A. H. A., Mamat, H., Rizkiyah, D. N., Yunus, M. A. C., Irianto, I., & Qomariyah, L. (2024). Green extraction of nutmeg (Myristica fragrans) phytochemicals: Prospective strategies and roadblocks. Open Agriculture, 9(1), 20220285.*
15. *Sasikumar, B. (2021). Nutmeg-Origin, diversity, distribution and history. Journal of Spices and Aromatic Crops, 30(2), 131-141.*
16. *Somani, R., Karve, S., Jain, D., Jain, K., & Singhai, A. (2008). Phytochemical and pharmacological potential of Myristica fragrans Houtt: A comprehensive review. Pharmacognosy reviews, 2(4), 68.*
17. *Verma, N. K., Singh, A. K., & Maurya, A. (2021). Myristica fragrans (Nutmeg): a brief review. EAS J Pharm Pharmacol, 3(5), 133-137.*
18. *Warsito, M. F. (2021). A review on chemical composition, bioactivity, and toxicity of Myristica fragrans Houtt. essential oil. Indonesian Journal of Pharmacy, 304-313.*
19. *Yamini, K., & Onesimus, T. (2013). Preparation and evaluation of herbal anti-acne gel. Int J Pharm Bio Sci, 4(2), 956-960.*