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Magic Remedy from Roots of Ayurveda Formulation of Polyherbal Cream for the Treatment of Melasma

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Abstract
Skin is the general covering of the entire external surface of the body . it is the largest organ of the body both by surface area and weight . glowing skin on the face give self confidence . Melasma has become major problem of the society . It is a pigmentary disorder hyperpigmentation primarily occurring on the cheeks ,forehead, nose upper lip and occasionally elsewhere on faces . it is pain less , superficial brownish macular patches . modern science recommends laser therapy and steroids which is expensive and have side effects . so , in this study devlopement of face cream is done with reference to ayurvedic text . The sign and symptoms mentioned in melasma is identical to vyanga which is mentioned in ayurvedic texts under " kshudraroga "by most of acharyas . Acharya charak considered vyanga as a rakta pradoshaja vyadhi which means viciation of blood. The treatment of melasma in Ayurveda is devoid of sideffect ,effective and promises to stop recurrence . so , here ingredients of the formulation are selected form the list of ekal dravya prayog in vyanga .which was compiled form ayurveda text . The formulation contain nutmega extract [myristica fragrans] traditionally used for skin disorder , acne scar pigmentation has anti inflammatory effect . licorice extract [Glycyrrhiza glabra]
It contains glabridin which is tyrosinase inhibitor it reduces melanin production . manjishta extract [Rubia cordifolia] which is blood purifier and enhances complexion fades blemishes .

Keywords: Melasma, Nutmega, Manjistha, Licorice

INTRODUCTION

Beauty is a subject of socio-medical importance . the problems are increasing at alarming rate day by day due to environmental factors , lifestyle changes which causes hormonal fluctuation which contributes to skin problems.

Melasma is more comman in females than males . it is brownish patches typically on malar region . as per Ayurveda it is correlated to vyanga . for the protection of skin people uses various type of cosmetics which can harm skin rather than cure . basically , cosmetics are for beautification not for cure of diseases . Ayurveda is a science that uses natural products for treatment with least side effects . in ayurveda various local application are mentioned for skin care such as massage , lepa , etc which helps in maintaing skin complextion as well as treating disorders. In addition , raktamokshan is also mentioned in samhitas . for managing any skin disorder drugs having properties which pacifies symptoms like itching , hyperpigmentation , blood purification , improve complexion are helpful for the making formulation .

hence in present study the formation is prepared , which is secondary dosage form of lepa therefore, cream which contain drugs like nutmega , manjishta and licorice.which are mentioned in vyanga chikista by different acharyas of Ayurveda . The selection of dravyas is done by the help of compilation done from various samhitas .

list of dravya acting on mealsma acc. To Ayurveda

sn	drug	Bot. name	Reference	Active constitute
1	manjista	Rubia cordifolia	Chakradutta	Purpurin, anthraquinone
2	Jatiphala	Mystrica fragrans	Bhavprakash	Myristic acid myristicin
3	licorice	Glycyrrhiza glabra	Charak Samhita	Glaberin Liquirtin
4	Arjun	Teminalia arjun	yogratnakar	Gallic acid
5	masur	Lenus culinaris	bhavprakash	Catechins
6	kapitha	Feronia elephantum	Sushruta samhita	Riboflavin Vitamin c
7	vat	Ficus bengalensis	vrindamadhav	tannin
8	jati	Jasminum officinale	G.N	Salicyclic acid
9	badar	Zizipus jujuba	chakradatta	spinosin
10	ingudi	Balanites aegyptiaca	bhavprakash	saponin
11	varun	Crateva nurvala	Bhavprakash	Lupeol, lactic acid

What is Melasma?
skin disorder that produces dark Melasma is a common, discolored patches, usually on the cheeks, forehead, nose, and upper lip.

Primary Causes of Melasma
Sunlight exposure: Ultraviolet (UV) radiation is the most significant trigger, stimulating skin pigment cells (melanocytes) to produce excess melanin.
Hormonal changes: Increases in estrogen and progesterone during pregnancy, use of birth control pills, or hormone therapy can trigger melasma.
Genetics: A family history or genetic predisposition increases risk, especially in people with darker skin types and those living in regions with high sun exposure.
Medications: Anti-seizure medications, birth control pills, or drugs that make the skin more sensitive to light may trigger melasma.
Thyroid disease: Melasma has been linked to thyroid disorders.
Stress: Some studies suggest stress and elevated cortisol levels may contribute to melasma.
Tanning beds and visible light: Exposure to artificial UV sources or heat can worsen melasma.
Risk Factors
Female sex: Melasma is more common in women than men.
Darker skin types: Those with more active pigment-producing cells (melanocytes) are at higher risk.
Family history: Genetics plays a significant role in susceptibility.

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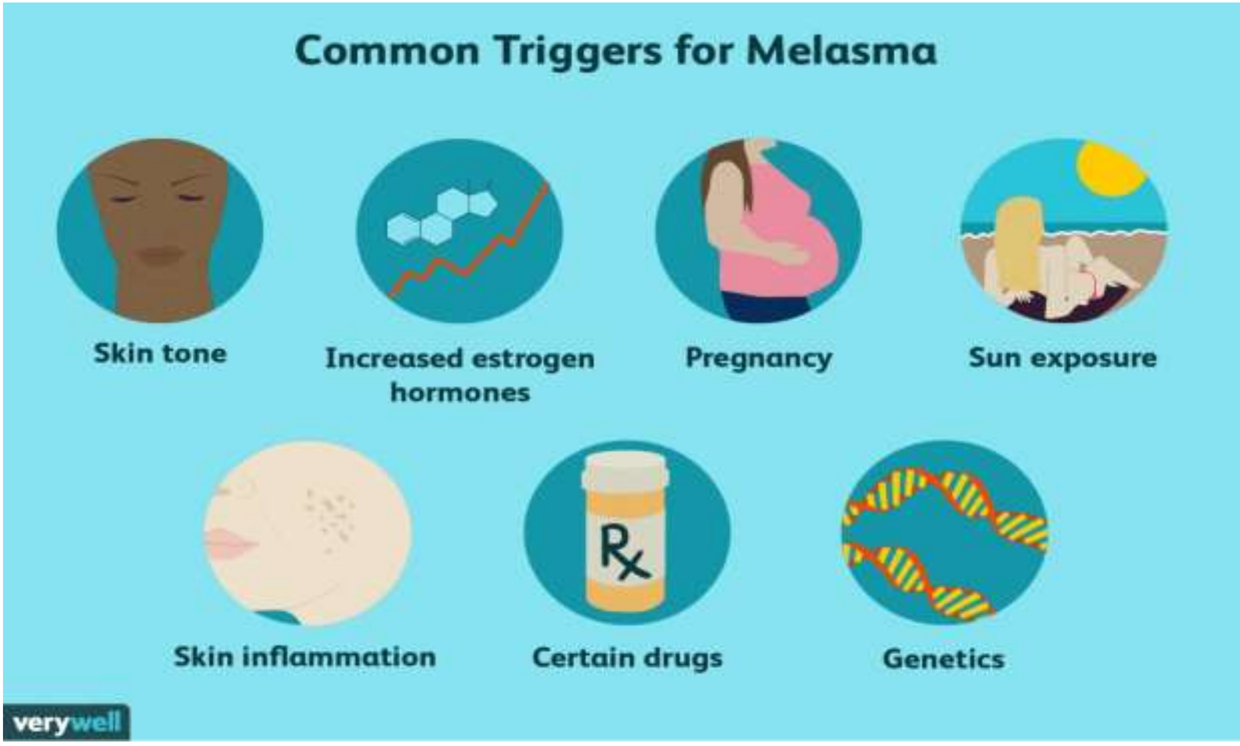


Melanin-

Melanin is a natural pigment produced by specialized cells called melanocytes in the skin, hair, and eyes, and it is primarily responsible for determining skin color and providing protection against ultraviolet (UV) radiation from the sun.

How Melanin Affects Skin Pigment?

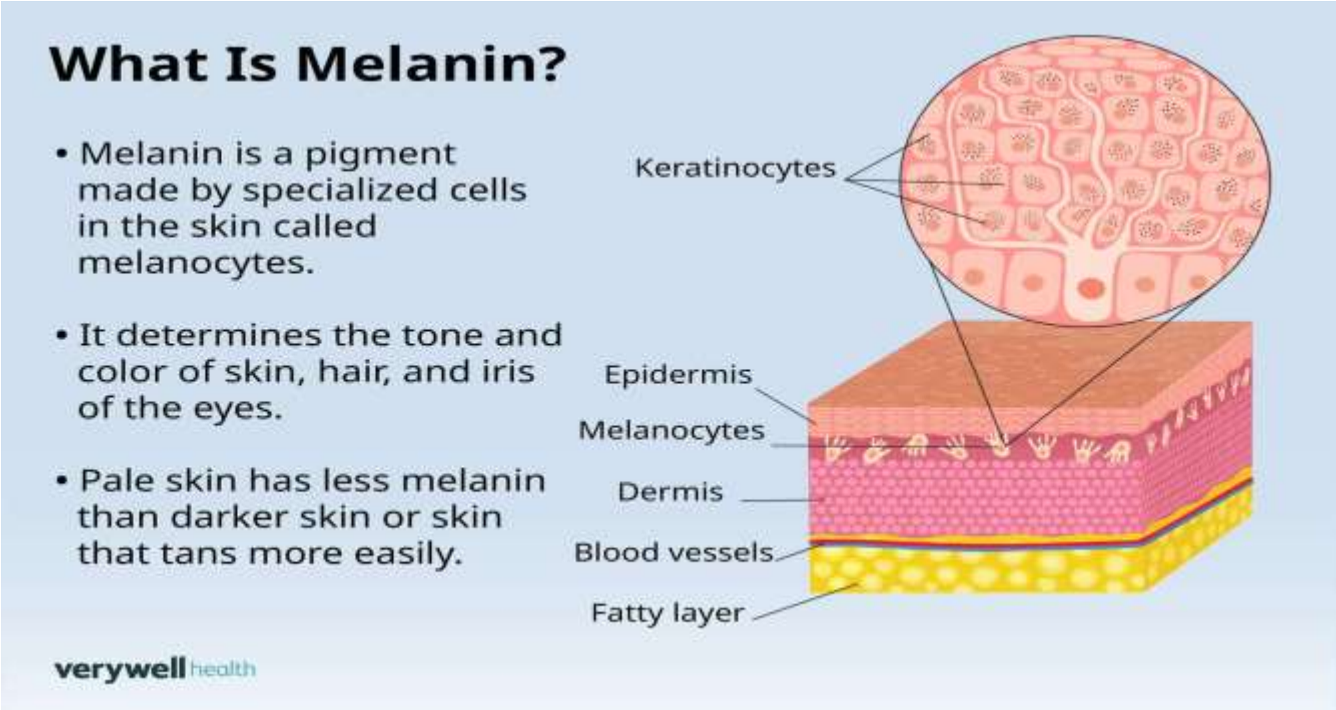
Melanin is synthesized in melanocytes and transferred to surrounding skin cells (keratinocytes), where it accumulates and determines the color of the skin. The amount and type of melanin—mainly eumelanin (brown-black) and pheomelanin (yellow-red)—dictate whether a person has darker or lighter skin tones. Individuals with darker skin produce more melanin, especially eumelanin, which provides greater protection against UV damage and reduces the risk of skin cancer. In contrast, lighter skin has less melanin, making it more susceptible to sunburn and UV-induced skin damage.

Biological Role of Melanin-

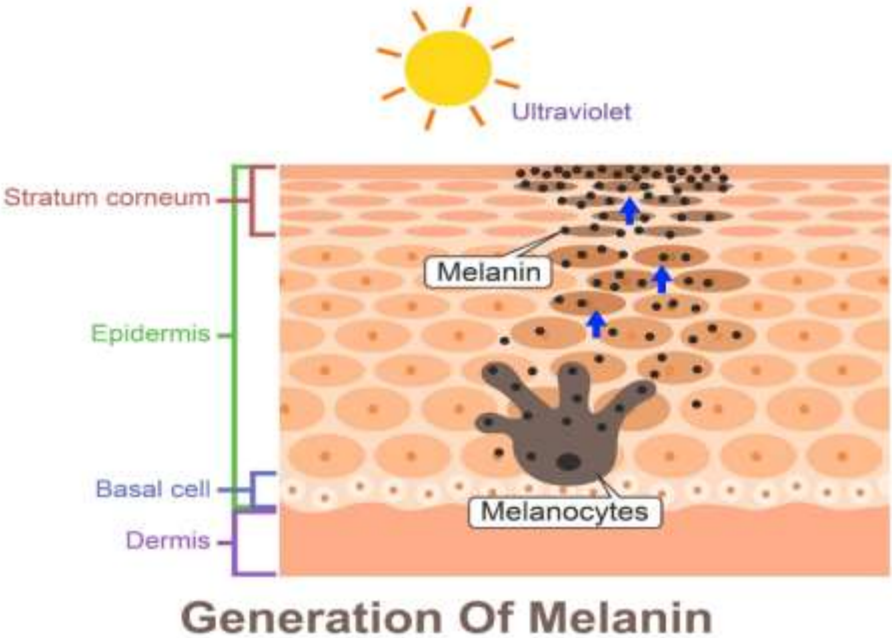
Melanin absorbs and scatters UV rays, acting as a natural sunscreen and protecting DNA in skin cells from damage.

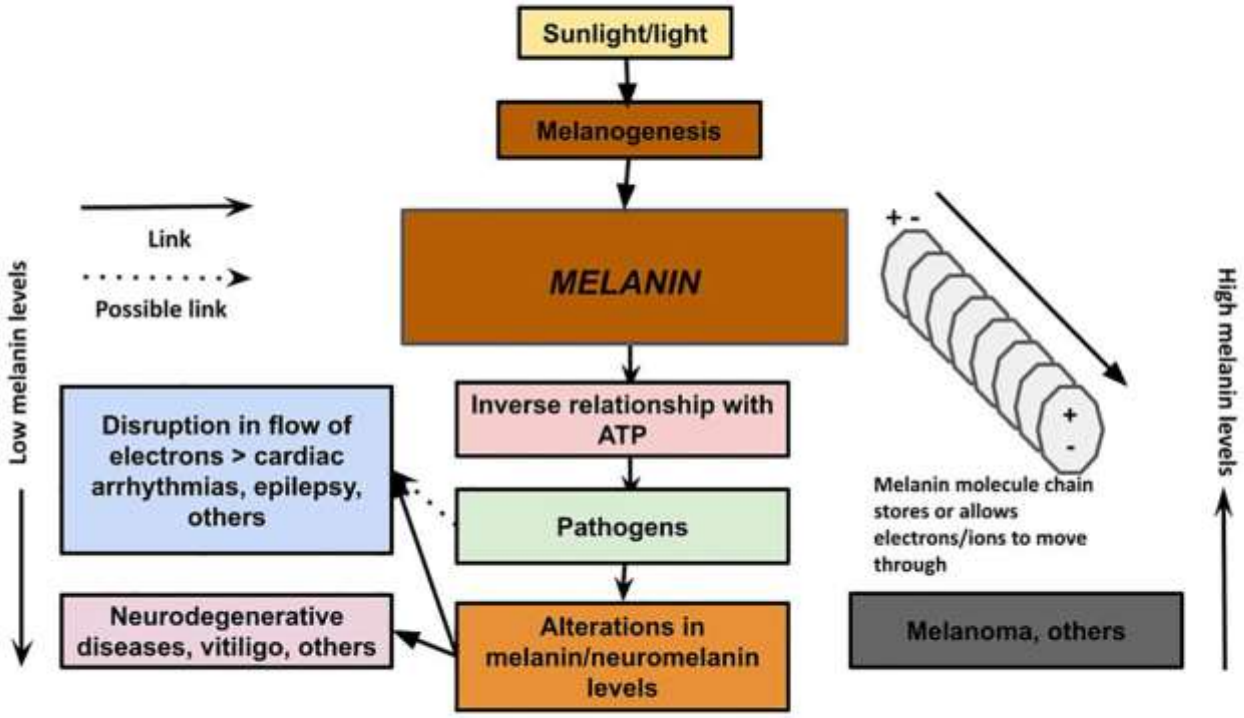
The production of melanin increases with sun exposure, leading to tanning—a temporary darkening of the skin that helps shield against further UV damage.

Variations in melanin levels are influenced by genetics, sun exposure, hormones, and certain medical conditions.



Disorders like albinism (lack of melanin) and vitiligo (loss of melanin in patches) result from abnormal melanin production or distribution





Taxonomical and botanical description –

A. Licorice (Glycyrrhiza glabra L.)

- **Taxonomical Classification**

Rank -Classification

- Kingdom Plantae
- Division Magnoliophyta
- Class Magnoliopsida
- Order Fabales
- Family Fabaceae
- Genus Glycyrrhiza
- Species Glycyrrhiza glabra L.

Botanical Description-

Glycyrrhiza glabra is a perennial herb reaching up to 1 m in height. It possesses pinnate leaves with 9–17 leaflets, lilac to violet papilionaceous flowers, and oblong pods containing several reniform seeds. The roots and stolons are sweet, fibrous, and yellowish brown, which constitute the main medicinal part.

Bioactive Compounds-

Major phytoconstituents include glycyrrhizin, liquiritin, glabridin, liquiritigenin, and isoliquiritigenin. Among these, glabridin (an isoflavan) exhibits significant anti-tyrosinase and melanogenesis inhibitory activity—making it a potent depigmenting agent for melasma.

- **Molecular Structure -** Glabridin
- **Molecular formula:** $C_{20}H_{20}O_4$
- **Core structure:** Isoflavan backbone with two phenolic rings linked by a 3-carbon bridge.
- **Functional groups:** Hydroxyl (–OH) groups contributing to radical scavenging and enzyme inhibition.


B. Nutmeg (Myristica fragrans Houtt.)

- **Taxonomical Classification**

Rank Classification

- Kingdom Plantae
- Division Magnoliophyta
- Class Magnoliopsida
- Order Magnoliales
- Family Myristicaceae
- Genus Myristica
- Species Myristica fragrans Houtt**.**

- **Botanical Description**

Myristica fragrans is an evergreen aromatic tree, up to 15 m tall, with simple alternate leaves and small yellowish flowers. The fruit is a fleshy drupe; when mature, it splits to reveal a brown seed (nutmeg) enclosed by a red aril (mace). The dried kernel is the spice used medicinally.

- **Bioactive compounds** -

Contains myristicin, elemicin, safrole, eugenol, and macelignan.
Macelignan and myristicin exhibit antioxidant, anti-inflammatory, and tyrosinase-inhibiting properties—beneficial for hyperpigmentation control in melasma.

- **Molecular Structure:** (Macelignan)
- **Molecular formula:** $C_{20}H_{22}O_4$
- **Structure:** A lignan-type compound with methoxy and allyl phenyl moieties.


C. Manjistha (Rubia cordifolia L.)

- **Taxonomical Classification**

Rank Classification

- Kingdom Plantae
- Division Magnoliophyta
- Class Magnoliopsida
- Order Gentianales
- Family Rubiaceae
- Genus Rubia
- Species Rubia cordifolia L.
- **Botanical Description-**

A perennial climbing herb with a woody base, rough quadrangular stems, and opposite whorled leaves. The flowers are small, greenish-yellow, borne in panicles. The roots are reddish-brown, cylindrical, and yield a red dye (manjisthadi pigment).

- **Bioactive Compounds-**

Major bioactives: Rubiadin, purpurin, munjistin, alizarin, and anthraquinones.
Rubiadin and purpurin show melanogenesis suppression, free radical scavenging, and anti-inflammatory effects that help reduce melasma pigmentation.

- **Molecular Structure** (Rubiadin)
- **Molecular formula:** $C_{15}H_{10}O_4$
- **Structure:** Anthraquinone nucleus with hydroxyl substitutions at C-1 and C-3.
- **Mechanism:** Inhibits melanin synthesis through antioxidant and tyrosinase-modulating activity.


Ingredients -

- **Prototype Formulation (100 g batch)**

Phase A – Oil Phase

1. Shea butter – 6 g (emollient, healing)
2. Almond oil – 6 g (vitamin E rich, nourishes)
3. Coconut oil (fractionated) – 4 g (light base oil)
4. Emulsifying wax (NF / Olivem 1000) – 5 g (emulsifier)
5. Cetyl alcohol – 2 g (stability,creaminess)

Phase B – Water Phase

1. Aloe vera juice – 35 g (soothing, hydrating)

2. Rose water – 25 g (skin toner, refreshing)
3. Glycerin – 3 g (humectant)
4. Purified water – q.s. to 100g

Phase C – Actives (Cool-down ≤40 °C)

1. Nutmeg extract – 2 g (skin clarifying, reduces scars/pigmentation)
2. Licorice extract – 2 g (melanin regulator, brightening)
3. Manjistha extract – 2 g (complexion enhancer)
4. Vitamin E oil – 0.5 g (antioxidant, repair)

Evaluation Parameters-

Appearance: Smooth, pale cream (may have slight reddish tint from Manjistha).
pH: 5.0–5.4 (skin-friendly).
Viscosity: Creamy, spreadable.
Stability: Check phase separation, color, odor, pH over 1–3 months.

Conclusion

The herbal cream formulated with Nutmeg (Jaiphal), Manjishta (Rubia cordifolia), and Licorice (Glycyrrhiza glabra) shows promising potential in the management of melasma and hyperpigmentation. These natural ingredients act synergistically—Nutmeg providing exfoliating and skin-lightening effects, Manjishta improving blood circulation and detoxification to reduce pigmentation, and Licorice inhibiting melanin production through tyrosinase suppression. Being herbal in origin, the formulation offers a safer alternative to conventional chemical depigmenting agents, with fewer side effects and additional benefits such as skin nourishment and complexion enhancement. Thus, this herbal cream can be considered a viable, effective, and consumer-friendly product for the cosmetic and dermatological market.

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