

# Skin Whitening Products



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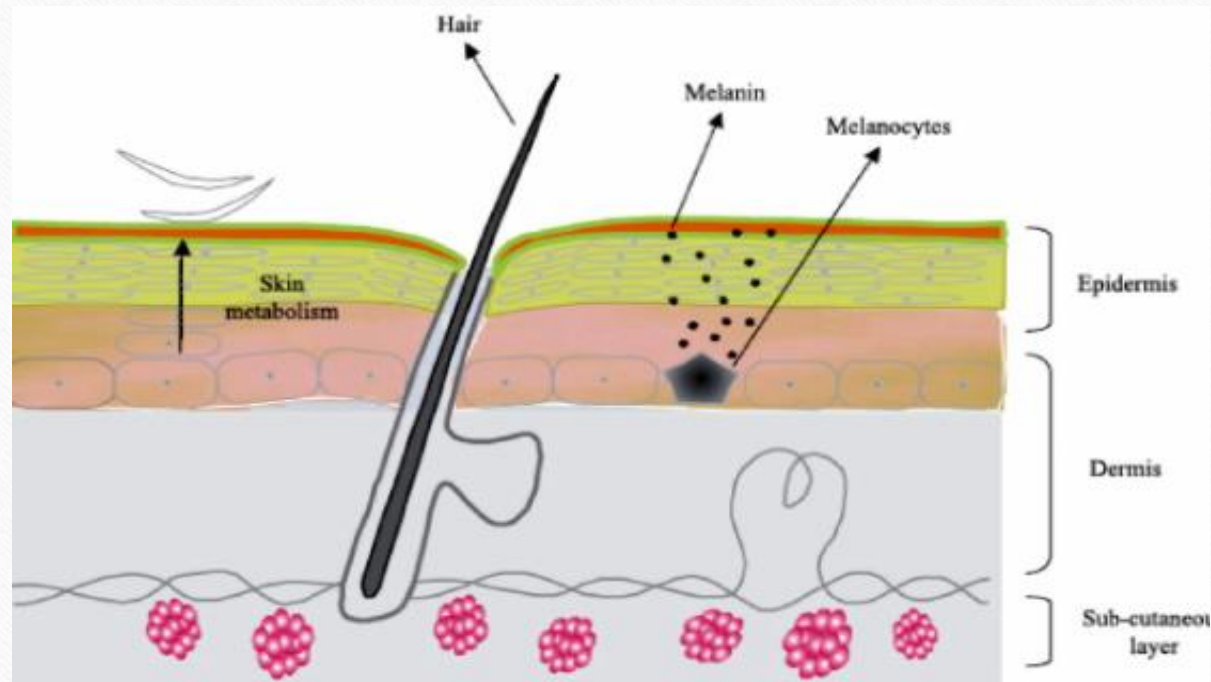
# Skin Whitening Products

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- Skin whitening is a term used for lightening the complexion of the skin through artificial means like creams, lotions, soaps and injections.
- The term skin whitening (also called skin bleaching) covers a variety of cosmetic methods used in an attempt to whiten the skin



- Visible pigmentation in mammals results from the synthesis and distribution of **melanin** in the skin, hair bulbs, and eyes.
- **Melanin** are produced by specialized cells, termed **melanocytes**, which are located primarily in the skin, hair bulbs, and eyes.



The melanin can be of two basic types:

- I. **Eumelanins**, which are give brown or black color.
- II. **Phaeomelanins**, which are give red or yellow color, in mammals typically there are mixtures of both types.

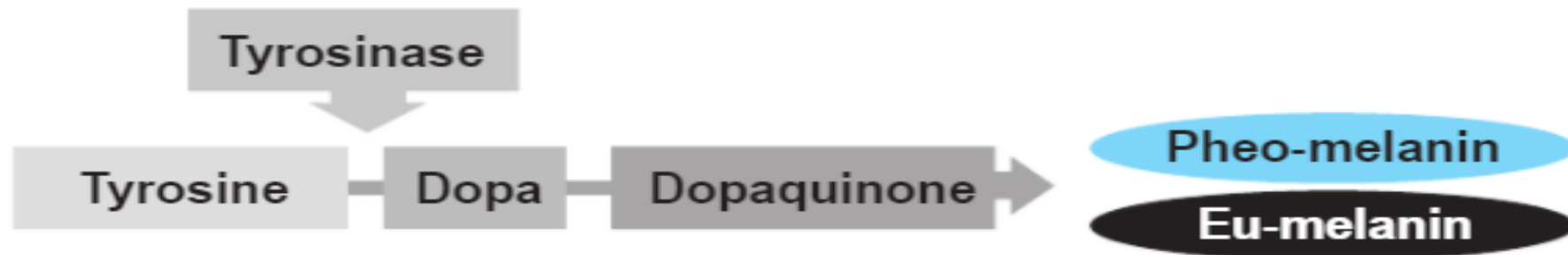
Melanocytes synthesize melanin within discrete organelles, termed **melanosomes**, which can be produced in varying sizes, numbers and densities.



The **melanosomes** are then passed on, in skin to **keratinocytes** and in hair bulbs to the hair shaft, where the final distribution patterns of the pigment are determined. This distribution plays an important role in determining color.

The most essential enzyme in this melanin biosynthetic pathway is **tyrosinase** and it is the only enzyme absolutely required for melanin production.

- However, as a result of the key role played by **tyrosinase** in the melanin biosynthesis, most whitening agents acts specially to reduce the function of enzyme by mean of several mechanism. Therefore, **tyrosinase inhibitors** have become increasingly important in the cosmetic and medicinal products used in the prevention of hyperpigmentaion and skin whitening.





# What cause darkening of skin

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- The main physiological stimulus of melanogenesis is the UV radiation of solar light, which can act **directly** on **melanocytes** or **indirectly** through the release of keratinocyte-derived factors such as  **$\alpha$ -melanocyte stimulating hormone (MSH)**.

- ❑ Increased production and accumulation of melanins characterize number of skin diseases, which include hyperpigmentation such as **melanoma**, **post-inflammatory melanoderma**, **solar lentigo**, etc.
- ❑ Several modalities of treatment for these problems are available including **chemical agents** or **physical therapies**.

# The classification of depigmenting activity and skin whitening agents:

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- Depigmentation can be achieved by:
  1. Regulating the transcription and activity of **tyrosinase**.
  2. Regulating the uptake and distribution of **melanosomes** in recipient keratinocytes.
  3. Interference with **melanosomes** maturation and transfer.



# Skin whiteners in commercial use



Mercury containing compounds



Hydroquinone



Corticosteroids



Ascorbic acid (Vitamin C)



Tretinoin



Azelaic acid



Laser treatments

## Skin whiteners in commercial use

Agent	Mechanisms of action	Advantage	Disadvantage	Recommendations
Mercury	Inactivate tyrosinase enzyme	-	Acute and chronic toxicity, neurological and kidney damage, acrodynia, irritability, photophobia ,	Should not be used
Hydroquinone	-Inhibits tyrosinase - Cytotoxic to melanocytes	Stable in combinations	Cytotoxic, mutagenic Ochronosis, contact dermatitis, skin irritation, redness & burning	Only allowed for small areas of skin under medical supervision
Corticosteroids	-Vasoconstriction - reducing the number and activity of melanocytes -reducing production of MSH	Useful for inflammatory conditions of the skin like eczema, contact dermatitis, and scabies	Spread and worsening of untreated infections, contact dermatitis, acne rosacea, hypertrichosis, adrenal suppression	Not recommended for skin whitening
Ascorbic acid (vitamin C)	- Reduce back o-dopaquinone to dopa -Antioxidant	Have a protective effect against skin damage induced by UV-irradiation	Highly unstable, low penetration, weak activity	MAP is more effective and safe derivative



<b>Agent</b>	<b>Mechanisms of action</b>	<b>Advantage</b>	<b>Disadvantage</b>	<b>Recommendations</b>
Azelaic acid	Weak inhibitor of tyrosinase, cytotoxic effect on melanocytes	Useful for lentigines, rosacea, and post inflammatory hyperpigmentation.	Therapeutic response is rather slow	Should be used under medical supervision
Laser	Emit a high-intensity energy source that destroy melanin in the skin		Discomfort, redness, mild swelling, and postinflammatory hyperpigmentation.	Not considered a first-line treatment

## 8. Fruits

Many fruits have skin whitening effect when they are eaten or scrubbed on skin. The leading fruit is papaya, wherein its enzyme papain can whiten the skin. Other fruits are lemon, lime, calamondin, and orange; all of these have vitamin C which is said to have a skin whitening effect.





# The danger of using skin whitening agents without prescription

## Side effects of skin whitening applications

- Dermatitis with severe drying, cracking of the skin and itching
- Melasma and hyperpigmentation of the skin
- Mercury poisoning
- Fetal toxicity in pregnant women
- Cushing's syndrome
- Liver failure
- Skin cancer



## The danger of using skin whitening agents without prescription

- Skin whitening creams often sold **illegally** without a prescription - may contain dangerous ingredients that could put your health at risk. Dermatologists say they are seeing more and more women of **Hispanic** and **African** descent suffering from complications related to the use of skin whitening creams.
- The hypopigmentation (**lack of skin pigment**) leaves the skin prone to UV damage by sunlight. This can predispose to **skin cancers** like **a melanoma**.

# Treatment of skin damaged by skin whitener

- The hyperpigmentation caused by skin whitening agents is **not 'curable'** and will persist for a lifetime.
- Using **a sunscreen** on a daily basis will assist in reducing the damage caused by sun exposure.
- **Emollients** are useful for dry and cracking skin and in cases of severe itching; a mild hydrocortisone cream may be used for a short period.
- Always consult **a dermatologist** for medical attention when treating skin damaged by long term use of skin bleaches.



# Recommendations



- The use of skin whitening agents must be controlled.
- Regulatory authority must increase the efforts to protect the people from the side effects of these agents.
- Increase the awareness of the people about the correct use and danger of the whitening agents.
- Research should be conducted to study the effect of temperature on the stability and use of these agents.





**All skin color  
are equally  
beautiful**



Thank You!

