

# *Is Africa in the Dark About Seeing the Light ? Insights into Global Skin Lightener Use*



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***“Mirror! Mirror! On the Wall.....***



***.....Who Is the Fairest of Us All ??”***

***“The rights of the people shall be the same, regardless of race, colour or sex... all laws which discriminate on grounds of race, colour or belief shall be repealed”***

Freedom Charter of South Africa, 1955  
Constitution of South Africa, 1996  
US Civil Rights Act of 1964  
UK Race Relations Act, 1965

“That such ideas continue into the 21st century is viewed with disbelief by academics and scientists, who are quick to cite evidence that biological rac**es don't exist and that races are “only” social constructs.** Yet for many of the world's people, the lived experience of race cannot be ignored. Despite ever more genetic evidence confirming the nonexistence of races, belief in the inherent superiority and inferiority of peoples remains a strong enough influence to make lives miserable.

Many of these ideas of innate superiority are based on a belief in a hierarchy of skin colour. When we explore the roots of this problem, we see it is based on the mistaken belief that differing intellectual capacities and potential, moral resolve and behavioural predilections are related to skin colour”







"I've been black and dark-skinned for many years, I wanted to see the other side.... I wanted to see what it would be like to be white and I'm happy"



"I'm not white inside, I'm not really fluent in English, I have black kids. I'm a township girl, I've just changed the way I look on the outside"

**Nomasonto "Mshoza" Mnisi**

**“I believed that being fair was pretty. I used some creams then that everyone knew would lighten the skin. It was fine at first. Later, I noticed patches of my face getting darker.**

**“Now I have really dark marks around my cheeks, caused by the skin lightener. I’m trying to sort it out with the help of a dermatologist,”**

**Hlengiwe Khuzwayo, Kenya**

**IN MANY PARTS OF AFRICA AND ASIA, LIGHTER-SKINNED WOMAN ARE CONSIDERED MORE BEAUTIFUL, ARE BELIEVED TO BE MORE SUCCESSFUL AND MORE LIKELY TO FIND MARRIAGE.**

**“I love it and wish I could swim in it. I travel to many Eastern countries and I get attention because I am now so light-skinned. I wasn’t fair and didn’t feel pretty enough. Now I feel beautiful and I know people are looking at me because I look so much whiter”**

**Ms Govender, SA Indian**

**CONGOLESE HAIR STYLIST JACKSON MARCELLE SAYS HE HAS BEEN USING SPECIAL INJECTIONS TO BLEACH HIS SKIN FOR THE PAST 10 YEARS. EACH INJECTION LASTS FOR SIX MONTHS.**

**"I PRAY EVERY DAY AND I ASK GOD, 'GOD WHY DID YOU MAKE ME BLACK?' I DON'T LIKE BEING BLACK. I DON'T LIKE BLACK SKIN"**

**"I like white people. Black people are seen as dangerous; that's why I don't like being black. People treat me better now because I look like I'm white,"**

**Jackson Marcelle, Congo**



# SKIN LIGHTENERS : THEIR USES

## CLINICAL ASPECT

Vitiligo



Ephelides (Freckles)



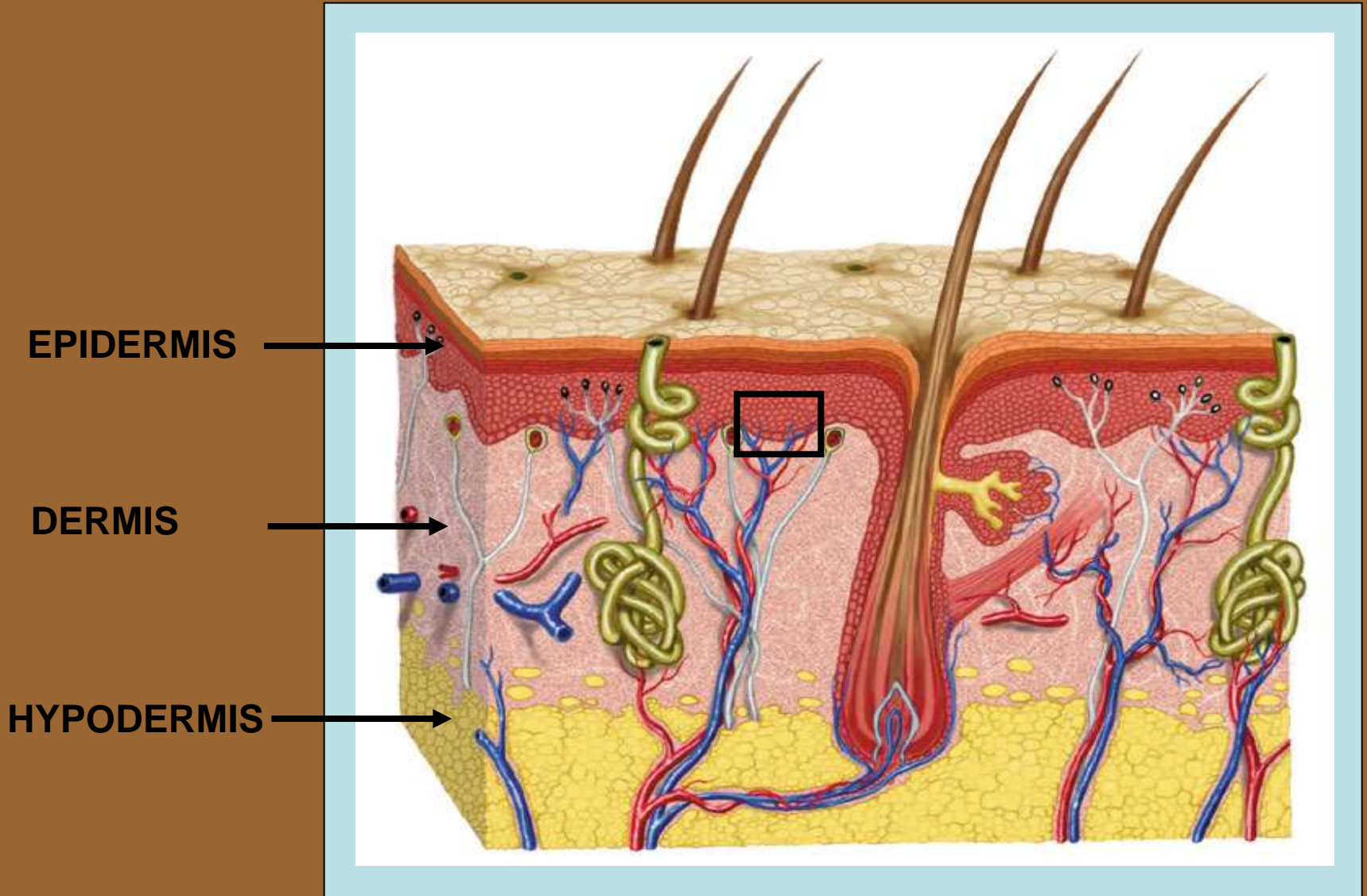
Lentigo



Melasma



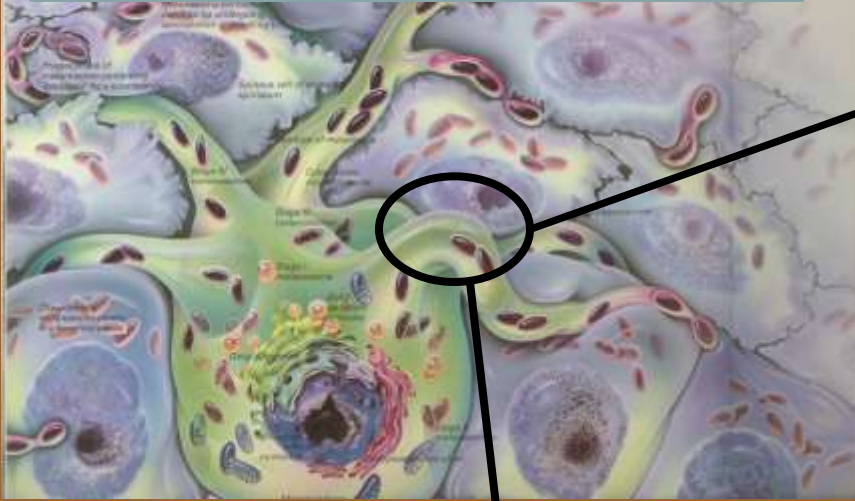
# HUMAN SKIN





# HOW DO SKIN LIGHTENERS WORK ?

A human melanocyte skin cell (green)  
among keratinocyte skin cells



## ● Tyrosinase inhibitors

- Hydroquinone (HQ, 1,4-dihydroxybenzene)
- Arbutin – HQ derivative
- Deoxyarbutin – synthetic derivative
- Kojic acid – hydrophilic fungal metabolite
- Aloesin – plant polyphenol

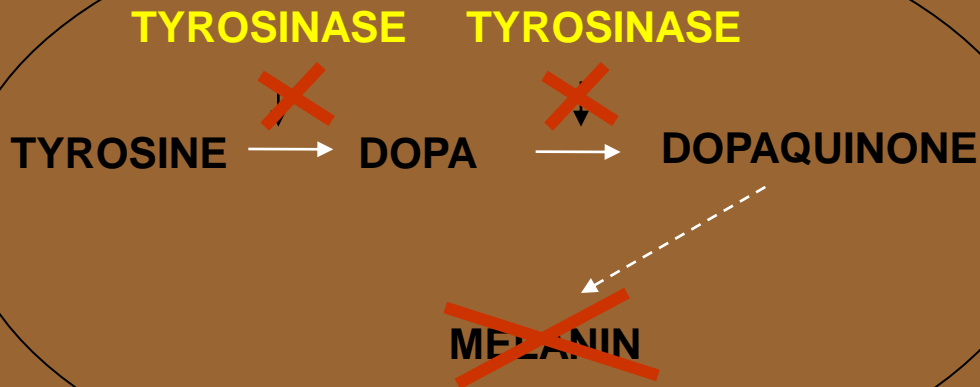
## ● Melanosome transfer inhibitors

- Protease-activated receptor 2 inhibitor (PAR-2)

## ● Skin desquamation

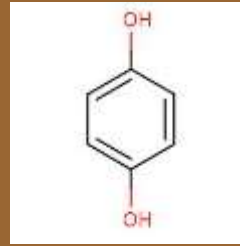
## ● Antioxidants

### Human Melanosome



# TYROSINASE INHIBITORS

## ★ Hydroquinone (HQ, 1,4-dihydroxybenzene)



Banned in EU member states under Directive 76/768/EEC:1976

2006 : FDA ban on over the counter preparations

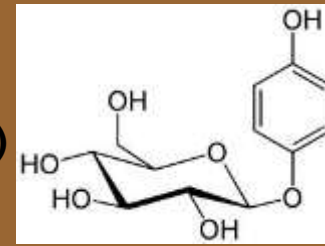
**“HQ is a potential carcinogen”**

-Found to cause neoplasms in several rat studies

-Thyroid cancer, blood cancer( leukemia), liver cancer, cancer of the kidney and **exogenous ochronosis**

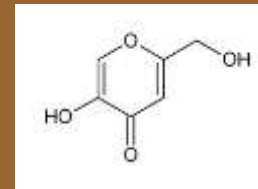
## ★ Arbutin/Uva Ursi/Bearberry extract

- Glycosylated HQ extracted from *Arctostaphylos* (Bearberry plant)
- Found in **wheat and concentrated in pear skins**
- < [300ug/mL] are effective in inhibiting tyrosinase with little evidence of cytotoxicity



## ★ Kojic Acid

- hydrophilic **fungal metabolite**
- chelates copper atoms at the active site of TYR
- popular treatment of melasma



## ★ Aloesin

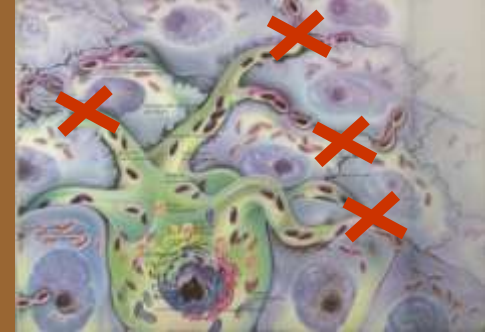
- Flavonoid
- Inhibits TYR but also inhibits TH and DOPA oxidase activities
- Other examples include resveratrol and licorice extract



## MELANOSOME TRANSFER INHIBITORS

### ★ Protease-activated receptor 2 inhibitor (PAR-2)

- Only expressed by epidermal keratinocytes
- activates phagocytic activity of Kc thus promoting melanosomal uptake
- **soymilk and soybean extracts** are natural inhibitors of PAR-2



## SKIN DESQUAMATION/DERMABRASION/CHEMICAL PEELS

- **removal** and **acceleration** of the uppermost layer of the epidermis/keratinocytes in order to remove melanin/lighten the skin
- acid-based eg. alpha-hydroxyacids (AHA), salicylic acid, linoleic and retinoic acids, phenols
- smallest AHA is **glycolic acid** (isolated from sugar cane, sugar beets, pineapple and unripe grapes)

## ANTIOXIDANTS

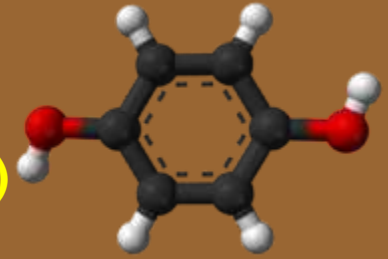
**Theory : ROS induces melanogenesis; aox's prevent photooxidation of pre-existing melanin**



**What is Hydroquinone's effect on the skin ?**



**HYDROQUINONE (1,4 DIHYDROXYBENZENE)  
(HQ)**



? **MUTAGENICITY**

(Compound that causes mutations in DNA)

? **DIFFERENTIATION/  
PROLIFERATION**

(Causing uncontrolled cell growth)

? **CARCINOGENICITY**  
("Cancer-forming" compound)

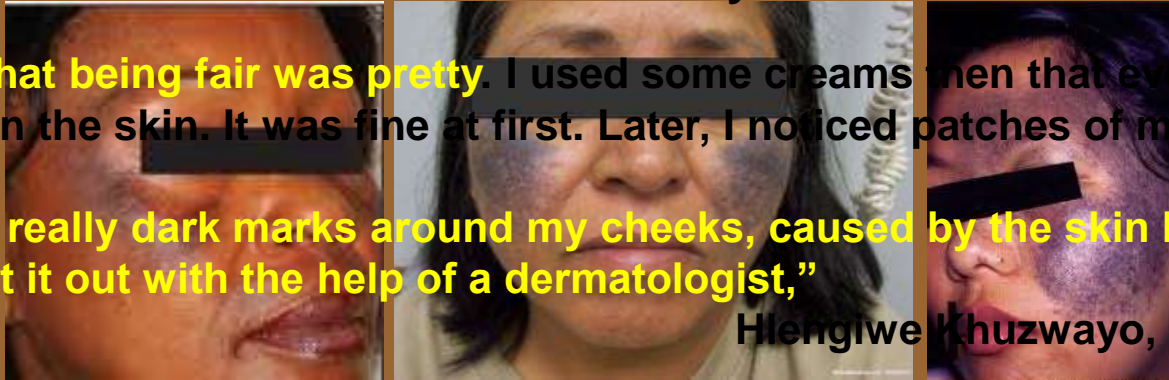
# EXOGENOUS OCHRONOSIS

- HQ, phenolic compounds, quinine-based anti-malarials, picric acid and mercury

“I believed that being fair was pretty. I used some creams then that everyone knew would lighten the skin. It was fine at first. Later, I noticed patches of my face getting darker.

“Now I have really dark marks around my cheeks, caused by the skin lightener. I’m trying to sort it out with the help of a dermatologist,”

Hengiwe Khuzwayo, Kenya



1966-2007

Countries/Continent	Reported cases of EO
<b>Africa</b>	<b>756</b>
US	22
Europe	8
Puerto Rico	2
India	1





# **Skin Lightener Timeline**







# SA Skin Lightener Timeline



70's

1974

347 pts, Bara Hosp, JhB  
 -“depigmented patches”  
 -“epidermal leukoderma/whitening in Blacks”  
 -2% monobenzene  
 (Dogliotti et al, 1974)

1975

**Cosmetic industry, R12.8 million**  
 -“facial improvements and the elevation of social standing”  
 (Bentley-Phillips et al., 1975)  
 -“**If product stings and burns the skin...it is working well**”  
 -3% hydroquinone – irreversible damage and severe ochronosis



1979

6% of 5463 patients seen over a 2yr period presented with skin damage related to the use of marketed cosmetic preparations

**This included :**

- greasy paraffin derivatives
- bleaching creams
- lanoline mixtures
- surface moisturising agents

**Histologically :**

- Hyperkeratosis
- Depletion of basal melanocytes
- Blocks of ochronotic tissue and collagen destruction





# SA Skin Lightener Timeline



80's

1980

**Cosmetic industry, R25 million**  
-“phenomenal”  
-“ripe for the picking” (Creamer, 1978)



1986



SA Law passed to include <2% HQ in cosmetic formulations  
- 58 brands of skin lighteners available





# Skin Lightener Timeline



80's

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Cosmetic industry, R25 million  
-“phenomenal”  
-“ripe for the picking” (Creamer, 1978)

1986

SA Law passed to include <2% HQ in cosmetic formulations  
- 58 brands of skin lighteners available across the continent

1989

Cosmetic industry, R390 million  
15% males; 42% females exhibited exog ochronosis  
-69% of this cohort used skin lighteners (Hardwick et al., 1989)  
-Inverse relationship between ochronosis and education



# Skin Lightener Timeline



1990's



Garnier



Estee Lauder

Multi-million \$\$\$

Digital Age



L'Oreal



Start-up companies







# Skin Lightener Timeline



## 00's Digital Age

2005

Cosmetic industry, \$ 14.7 billion  
Of which "Natural beauty products" was \$10 billion



2006

### Nguni tribe

- *Cassipourea flanaganii* (small leaved bastard onionwood), *Cassipourea gerrardii* (bastard onionwood), *Sideroxylon inerme* (white milkwood), *Olea capensis* (ironwood), *Curtisia dentata* (assegai tree) and *Rapanea melanophloeos* (Cape beech).



2010



**BBC NEWS SOUTH ASIA**

TRANSFORM YOUR FACE ON FACEBOOK WITH VASELINE MEN

By Hilary Whiteman CNN  
**STORY HIGHLIGHTS**

- A new skin-lightening Facebook application for men created by Vaseline is stirring debate
- App was created for India market and is promoting a skin-lightening UV body lotion
- Lotion is one of 240 skin-lightening products launched in India in last five years

# Skin Lighteners : Where to from here ?

**Education is the KEY!!**

- Popular Press
- Seminars/Public Talks

UNDERSTAND

**Advertising agencies/Cosmetic companies :  
need a Watchdog organisation**

**Change in “Self-image”**

**Cosmetic ethics and legislature**

PREVENTION  
..OR CONTROL

# Skin Lighteners : What are we doing ?

**REGENERATE....NEW, SCIENTIFICALLY-BASED KNOWLEDGE!!**



## Collaborations

- **National and Internationally recognised scientists and governments**
- **Recognised scientific journalists**
- **Implementation and publishing of scientific, ethically sound studies in South Africa and Africa**



**FINALLY.....**

**LOVE THE SKIN YOU'RE IN!!....**

**.....IT'S THE ONLY ONE WE'VE GOT!!!**

**Acknowledgements:**

**Redox Labsters**

**Mr Quentin Isaacs, Faculty of Medicine, UCT**

**Prof George Chaplin, Dept of Geographical Sciences, PennState Univ.**



**More info : <http://redoxlab.uct.ac.za>**



**Thankx !**