

toxicliniq

The official newsletter of Toxicology & National Poisons Information Centre, National Hospital of Sri Lanka

Toxicology Newsletter is an updated information collection for the healthcare practitioner that intended to enhance knowledge, stimulate research and promote

better management of patients with poisoning. The newsletter also publishes clinically relevant review articles, letters to the editor and commentaries.

Themes covers are of interest to clinicians, researchers, epidemiologists and other health care professionals.



Becoming fairer within 5 weeks doesn't change the fact that you are a dumbass

The dark side of fairness creams

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Introduction

Unless there is no change in the concept that fair skin is the beautiful option, people will continue using fairness creams. Our skin colour is determined by

our race and genetic lineage. Fairness creams can only work to a certain extent. As per dermatology studies, achieving fairness up to 20% is possible, but not more than that.

There are many harmful effects of fairness creams that can be otherwise considered as the fairness creams side effects. These can vary from mild skin irritations to serious problems such as skin cancer.

Sudden side effects of fairness creams will present shortly after the application of the cream, whereas long-term effects will be seen over time due to constant use. Knowing the harmful effects of fairness creams will be helpful to

decide whether it is a healthy option or not (1)(2).

Common side effects of fairness creams

- **Itching:** Itching is one of the common harmful effects of fairness creams. This usually occurs shortly after the application of the cream. It is advised to wash the skin with cold water if someone experience any type of skin irritations.
- **Allergy:** Someone can get allergic to one or more chemicals used in the fairness creams. This will lead to skin

skin irritations, redness, itching and in serious cases, it will lead to oedema.

- Skin cancer: Constant use of fairness creams is one of the reasons for skin cancer. It is important to use only creams of high quality. Some chemicals used in fairness creams are found to be cancerous. Creams with hydroquinone, mercury, or steroid-based skin lighteners should be avoided.
- Dry skin: If someone is not smart enough to find out the right cream for the skin, it will end up in dry skin and flakes. Before buying fairness cream, understand the skin type and select a cream that matches the requirement.
- Pimples: If someone use creams that are too oily, there are chances for the skin pores to get clogged. This will in turn lead to formation of pimples. This is one of the annoying harmful effects of fairness creams as it will leave extra marks and scars on your face.
- Photo-sensitivity: Continuous use of fairness creams will make the skin sensitive to sunlight. This will result in sun burn, blisters and pigmentation. Remember that overdoing is definitely harmful while using fairness creams (1)(2).

Hydroquinine



Hydroquinone [$C_6H_4(OH)_2$] is a toxic chemical that is used in black and white film processing, manufacturing rubber and is found in some hair dyes. Hydroquinone is

used in skin lightening creams and lotions because it is an effective bleaching agent, slowing the production of the *tyrosinase* enzyme and reducing the amount of melanin formed.

While it is not known the full extent of the health risks hydroquinone poses, it is considered to be cytotoxic (toxic to cells), mutagenic and carcinogenic (cancer causing). Hydroquinone is thought to increase the risk of complications such as thyroid disorders, liver disease and adrenal dysfunction.

Common side effects reported from the use of hydroquinone creams include skin rashes, burning skin irritation, excessive redness and a dryness or cracking of the skin.

Like other pigment-reducing complexes, hydroquinone can make the skin more susceptible to the sun's UV rays. This can lead to serious sunburn and an increased risk of certain types of skin cancer (3).



Mercury

In August 2013 the Food and Drug Administration (FDA) issued a warning to consumers advising them not to use skin creams, beauty soaps or lotions that might contain mercury due to the dangers of mercury poisoning. The FDA first banned the use of mercury in skin-bleaching and

lightening products back in 1990 but the regulatory office has since found that mercury was being used as an ingredient in some products.

Mercury is a toxic chemical that is readily absorbed into the body but it is not easily removed. When mercury is used for skin whitening the initial side effects can include skin rashes, skin discoloration and scarring. Long term exposure to mercury can have more serious health consequences.

The WHO advises that using mercury on a long term basis can damage the kidneys and the nervous system. It can also cause depression or psychosis and interfere with the development of the brain in unborn children and very young children.

Products containing mercury will have the words "mercury," "mercurous chloride," "mercuric," "mercurio," or "calomel." If there is no label or list of ingredients avoid using that product (4).





No steroid cream on face without prescription

Steroids

Unfortunately, many skin-lightening creams contain illegal compounds which can include high-dose steroids. Although steroids can be useful in treating inflammation of the skin caused by diseases such as eczema, psoriasis or dermatitis, they were never intended for skin lightening use.

When steroids are prescribed this take place under the supervision of a skin specialist and the usage is generally minimized to a few short weeks.

While topical corticosteroids can appear to lighten the skin very quickly, this is because they act as “vaso-constrictors”. This means the blood vessels in the area treated will become constricted (narrow) and the flow of blood will be slowed, giving the skin a whiter appearance.

Steroids can also slow the process of cell regeneration so less melanocytes are formed, leading to a decline in melanin production. The negative side of slowing the skin’s natural cell renewal is that the epidermis (outer skin layer) can become thinner and many people complain of the appearance of green veins in the skin.

Unmonitored use of high-dose steroids can lead to many problems. The thinning effect on the skin can increase the risk of physical damage to the skin. The skin can become more susceptible to chemical and environmental factors and there will be an increased risk of sun damage and additional pigmentation problems. The high doses of steroids found in the illegal skin whitening creams can also interfere with the body’s hormone levels and, in extreme cases, can result in disorders such as Cushings syndrome which affects the adrenal gland.

Several possible mechanism of actions (7):

- Inhibition of the activity of tyrosinase: The catalytic action of tyrosinase is inhibited (slowed or nearly stopped) by the skin whitening agent.
- Inhibition of the expression or activation of tyrosinase: The antimelanogenic agent causes that less tyrosinase is generated or that tyrosinase is not activated to its functional form.
- Scavenging of the intermediate products of melanin synthesis.
- Preventing the transfer of melanosomes to keratinocytes.
- Directly destroying existing melanin.
- Destroying melanocytes.

Skin whitening or skin lightening creams can be used to treat a range of problems including dark spots, acne scarring, freckles and melasma but care should be taken when choosing a product because chemical-based skin whiteners can be potentially dangerous and carries the significant health risks with extended use.

Some of the most common ingredients used in skin lightening / fairness creams

- Tretinoin
- Hydroquinone
- Arbutin
- Kojic acid
- Azelaic acid
- Vitamin C
- Glutathione
- Alpha hydroxy acids
- Niacinamide
- Depigmenting agents (Monobenzene, Mequinol)
- Mercury

How Do Skin Whiteners Work?

Melanin is a brown pigment produced in the melanocytes in the skin. The variation of skin colour among individuals is mostly because of variation of the content of melanin in the skin. Skin with little or no melanin is almost white.

Melanin is the body’s natural protector against the harmful effects of UV rays. However, an over production of melanin (hyperpigmentation) can cause uneven skin tones and other skin disorders. The enzyme, tyrosinase controls the rate of melanin production in the skin (5)(6).

Skin whitening creams contain ingredients that act to slow the production of melanin in the skin. To accomplish this, there are

Rescue : Natural Bleaching Agents



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We welcome your comments and suggestions regarding the newsletter.



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