DermNet NZ

Authoritative facts about the skin from the New Zealand Dermatological Society Incorporated.

Bleaching creams

Bleaching or skin lightening creams or ointments are widely used worldwide either to attempt to remove localised dark patches (e.g. melasma or postinflammatory hyperpigmentation) or as a fashion trend aiming to reduce normal melanin in the skin.

What do bleaching creams contain?

Bleaching creams may contain a variety of ingredients. Some of these are more effective than others. In many areas, unregulated products are sold, often without listing their contents or they are labelled incorrectly. They may be safe but completely ineffective, or the chemicals may result in side effects and toxicity.

Skin lightening agents may include:

- Hydroquinone
- Topical retinoids
- Botanicals
- Other agents
- Topical corticosteroids
- Mercury

What are the risks and side effects?

The risks depend on which ingredient is being applied to the skin, in what concentration, over what area, and for how long it is used.

Hydroquinone

Hydroquinone is an effective skin lightening agent. It is no longer available in some parts of the world because of the damaging affects of longterm use. The recommended concentration over the counter is 2%, but up to 4% is available from a dermatologist in some countries. It should be used daily for no more than 6 months.

Its initial effect of inhibiting pigmentation is lost with prolonged application and sun stimulation.

Exogenous ochronosis is the main risk of continued use. This results in an irregular blue-black staining affecting sun-exposed skin and nails. It is due to deep deposition of the same pigment that occurs in alkaptonuria (endogenous ochronosis). Exogenous ochronosis may also occur from phenol, quinine or resorcinol.

Ochronosis may also result in loss of elasticity of the skin and impaired wound healing.

In some subjects, excessive use of hydroquinone in combination with certain foods in the diet (fish, eggs, offal, beans) can result in an unpleasant fish odour in the body secretions such as sweat and urine (trimethylaminuria).

Hydroquinone is sometimes given another name, such as:

- 1, 4-Benzenediol
- Quinol
- Benzene-1

- 4-Diol
- p-Diphenol
- p-Dihydroxyl benzene
- Hydrochinone
- p-Hydroxylphenol
- Hydrochinonium
- Hydroquinol
- Tequinol

Monobenzyl ether of hydroquinone is a strong derivative of hydroquinone that almost always causes nearly irreversible complete depigmentation of the skin (white patches).

Topical retinoids

Tretinoin is the main topical retinoid that has been used in skin lightening products. It thins the skin, increasing the penetration of other agents. as well as having a direct effect in reducing melanisation. It is a prescription medication because of potential risk in pregnancy. It can be quite irritating and may cause contact irritant dermatitis.

Botanicals

New active skin lightening compounds isolated from plants are being added to modern cosmetics. They appear to inhibit the production of melanin without being toxic to the melanocyte (tyrosinase inhibitors). It is not yet known which preparations are the most effective. Active ingredients include:

- arbutin 1% (a glycosylated hydroquinone)
- paper mulberry 1%
- glabridin 0.5% (licorice extract)
- *Arctostaphylos patula* and *Arctostaphylos viscida*
- aloesin
- gentisic acid
- flavonoids
- hesperidin
- ascorbic acid or its derivative, magnesium ascorbyl phosphate 10%
- niacinamide
- yeast derivatives
- polyphenols
- soy proteins

Other agents

Other agents in use for their skin lightening effect include:

- azelaic acid 20%, produced by the yeast, malassezia
- kojic acid 1-4% (5-hydroxy-4-pyran-4-one-2-methyl), produced by a fungus (may cause contact irritant or contact allergic dermatitis)
- mequinol 5-20% (4-hydroxyanisole)
- isopropylcatechol
- N-acetyl-4-cysteaminylphenol
- N-acetyl glucosamine
- piceatannol

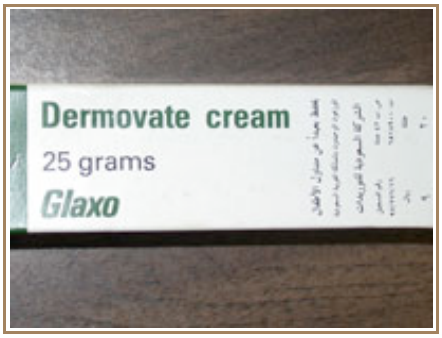
Unregulated skin lightening creams may include many other ingredients. These may be relatively safe (e.g.

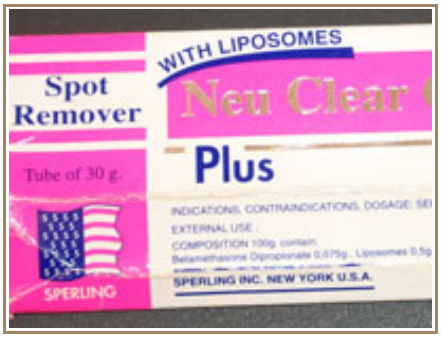
lemon juice), toxic (e.g. camphor), irritating (e.g. detergents) or likely to provoke allergy (e.g. hair dye). Complications may include:

- Irritant contact dermatitis
- Allergic contact dermatitis

Topical corticosteroids

Steroid creams used for bleaching skin colour





Topical corticosteroids lighten the skin by the following mechanisms.

- Initial blanching due to vasoconstriction
- Slowing down skin cell turnover so reducing the number and activity of melanocytes (pigment cells)
- Reducing production of precursor steroid hormones thus reducing production of melanocyte stimulating hormone (MSH)

In New Zealand and many other countries, stronger topical corticosteroids are regulated and can only be obtained with a doctor's prescription. However products containing betamethasone valerate, fluocinonide and clobetasol propionate can be purchased over the counter from a pharmacy or from drug vendors in a market place in some places such as Nigeria.

Potent topical steroids have a wide range of local side effects including skin thinning and atypical fungal infections (tinea incognito). When used over large areas for prolonged periods, they may risk serious internal disease from hypopituitarism. Steroid addiction syndrome results in folliculitis and steroid rosacea.

Steroid side effects after using bleaching cream

Stretch marks

Folliculitis

Mercury

Mercury was used as mercurious chloride, oxide and ammoniated mercury in many cosmetics and toiletries in the early part of the 20th century, before it was realised it caused toxicity. It is still found in some skin lightening creams because mercury inactivates the enzyme that leads to the production of melanin.

Longterm application of mercurial products to the skin makes the skin and nails darker, because the mercury is

deposited in the epidermis, hair follicles and dermis.

Mercury poisoning results in acute and chronic toxicity including acrodynia, as well as neurological and kidney damage.

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Related information

References:

- Yetunde M. Olumide, Ayesha O. Akinkugbe, Dan Altraide, Tahir Mohammed, Ngozi Ahamefule, Shola Ayanlowo, Chinwe Onyekonwu, and Nyomudim Essen. Complications of chronic use of skin lightening cosmetics. International Journal of Dermatology 2008;7;344–353.
- Skin lightening preparations and the hydroquinone controversy. Dermatol Ther. 2007 Sep-Oct;20(5):308-13. Medline.

On DermNet NZ:

- Melasma
- Postinflammatory hyperpigmentation
- Hydroquinone
- Azelaic acid

Other websites:

- Skin Lightening and Depigmenting Agents – emedicine dermatology

Books about skin diseases:

See the DermNet NZ bookstore

Author: Clin Assoc Prof Amanda Oakley, Hamilton New Zealand

DermNet does not provide an on-line consultation service.
If you have any concerns with your skin or its treatment, see a dermatologist for advice.