

Myths of skin whitening agents and the emerging use of glutathione

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From light-skinned goddess portrayed in ancient religious scenes, pearl gulping practices in China, turmeric functions in India to clay application in Africa, history has been hued by our faulty aversion for the darker skin shades.¹ The appeal of a more translucent appearance is implied by practices dating from Cleopatra's milk showers to Queen Elizabeth I's use of ceruse face powder (a mixture of lead and vinegar).² The Asian culture associates fairer skin with feminine beauty, racial superiority and power. Media and advertisements have unequivocally connected more skin fairness to magnificence, sentiment and even career success. Skin, hair and eye color is hereditarily controlled by the measure of melanin found in the top layers of skin.³ Skin whitening creams most often give the skin an orange hue and when the sun hits hard on the unsupported hypo-pigmented skin, the yellowish orange hue will turn dark again. Most of these items, claim to be anti-melanin, are currently on sale since long, but with potentially adverse long-term outcomes. Skin lightening products available in the market contain a dangerous cocktail of harmful chemicals like mercury, hydroquinone and steroids, and so are extremely injurious to health.⁴ Products containing mercury may have serious side effects like neuronal damage, renal damage and anxiety/depression and decrease skin resistance to bacteria and fungi.⁴ Products containing hydroquinone may lead to uneven blue black pigmentation (ochronosis), liver damage and skin cancers, and those with corticosteroids can lead to hirsutism, skin atrophy, renal suppression, hypertension, infections, contact eczema and Cushing's syndrome.⁵ A number of topical cosmeceutical agents containing hydroquinone, alpha and beta-hydroxy acids, tretinoin, mequinol, arbutin, vitamin C and magnesium ascorbyl phosphate are now in vogue for treatment of hyperpigmentation disorders and for skin lightening.⁶ The local side effects of these agents and the quantity required for application to large surface area constitute major limitations, and the effect also remains localized to the site of application, and thus fails to provide overall skin lightening effect.^{4,6} Glutathione is a low molecular weight thiol-tripeptide with antioxidants and anti-melanogenic properties. It has recently become the wonder drug and most popular "systemic skin lightening agent" all over the world.⁷⁻⁹ Glutathione is available in market in oral, parenteral and topical forms. Oral Glutathione is easily accessible over-the-counter in Pakistan

and many Asian countries. The drug has a low bioavailability in humans due to which manufacturers usually recommend intravenous use to quickly achieve the desired therapeutic levels in the blood and skin for instant skin lightening effects.⁷ However, high doses of Glutathione when given intravenously may result in serious adverse effects like kidney failure, thyroid dysfunction and Steven Johnson's syndrome/toxic epidermal necrolysis.⁸ Moreover, the whitening effect will not remain forever and even after the sessions are complete, patients have to be on maintenance therapy and acquire sun protection.^{8,9} The safety profile of oral Glutathione seems to be good in the recommended doses of 500-1000 mg/day for up to 6 months but the long-term efficacy still remains questionable and studies with larger sample size and long-term follow-ups are required before Glutathione can be safely recommended for the purpose of skin whitening.^{8,9}

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