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# EVALUATION OF STEROIDS IN FACE CREAMS OF DIFFERENT MARKETED BRANDS

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**Abstract**

Steroid drugs for external use can relieve inflammation but cannot kill bacteria. On the contrary, they promote the breeding of bacteria. Topical steroids have been used for about 50 years and their introduction was a milestone in dermatology. Steroids led to the adverse reaction such as skin irritation, blackness, pimples, redness, skin eruption etc. According to the constituents of marketed cream which are mentioned on the label there is no any information about steroidal constituents in preparation. In present investigation, by applying chemical test in marketed preparation and in pure steroidal preparation, an attempt was made to evaluate the presence of steroid in various marketed topical preparation (Set wet, Garnier, Pond's, Ayur etc.). Adverse reaction produced by the marketed topical preparation led to the starting of this research work and evaluated different marketed preparation for the presence of steroid. Salkowaski reaction, Liberman Bruched reaction, Liberman reaction had been applied to test the presence of steroid. From this research it can concluded that many marketed preparation which promises instant fairness, glowing, brighten skin have a dreadfully negative side and show serious side effect on the skin due to presence of steroid.

**Key words**: Steroids, Inflammation, Salkowaski reaction, Liberman Bruched reaction, Liberman reaction.

## Introduction

The practice of herbal skin treatment has very ancient origin. The earliest news about the use of medicinal plants dates back to 8000-4000 BC, in Asia[1] Skin cosmetics are reported to be used both as makeup and skin care

products [2]. Most of the cosmetics available in Indian market are sold without prescription. Nonprescription creams that claim to lighten the skin could be harmful. A survey conducted by British skin foundation, reports that 16% of dermatologists believe that skin lightening creams are completely unsafe. A cream bought over the counter is not necessarily medically proven and could permanently damage the skin of user. Many of skin cosmetics are reported to contain hydroquinone, corticosteroids and mercury containing compounds, but are still used in many countries in spite of serious health concerns[3].

The present study was based on alerts raised by a case report of a 53-year-old African American woman, published recently in a reputed journal of dermatology. This case report documents an unusual example of striae caused by topical steroid usage. That lady was reported to use a cream (for fairness) sold by a local beauty salon, for at least 2 years. She was unaware of the fact that the cream was containing certain topical steroids. The sale of certain bleaching and fairness creams, without a prescription, by beauty salons and other retailers has been well-documented in the dermatology literature[4]. So all topical medications, and beauty creams purchased without a prescription should be carefully investigated for the presence of steroids.

With this background, certain face creams commonly used by Indian population on regular basis for fairness, moisturisation, sunscreen and antiaging effect were selected for the study. Many of them were claimed to be herbal and devoid of any harmful effects. Only face creams were selected because the skin on the face is particularly susceptible to the side effects of topical steroids, and getting these medications into the eyes can result in glaucoma or cataract formation.

**Materials and Methods**

**Chemicals:** All chemical and solvents used were of analytical grade.

**Experimental work**

**(1) Selection of creams** The creams were selected based on a questionnaire filled by 78 persons. The persons were of different socio economic status, age and gender and working area.

**(2) Tests used for detection of steroids:** Standard chemical reactions viz. Salkowaski reaction, Lieberman

Bruchard reaction and Lieberman reaction were used to detect the presence or absence of steroids in various selected face creams in following manner.

- **Salkowaski reaction:** A small quantity of cream was dissolved in 2ml of chloroform; to that 2ml concentrated sulphuric acid was added. After shaking well, red chloroform layer appears and acid layer show greenish yellow color, if steroid is present.
- **Lieberman Bruchard reaction:** A small quantity of cream was dissolved in 2ml of chloroform. Then added few drops of acetic anhydride and conc. $H_2SO_4$. First red then blue and finally green color are appears, if steroid is present.
- **Lieberman reaction:** A small quantity of cream was dissolved in 3ml of chloroform. Then added 3ml of acetic anhydride. Heated and cooled the prepared solution. Then added few drops of conc. $H_2SO_4$. As a result a blue color is appears [5] if steroid is present.

**Results and Discussion**

| S.No. | Marketed face preparation | Salkowaski reaction | Liberman Bruched reaction | Liberman reaction |
|---|---|---|---|---|
| 1. | Fair &Handsome Cream | + | + | + |
| 2. | Set Wet Cream | + | + | + |
| 3. | Ayur Cream | + | + | + |
| 4. | Ponds Cream | + | + | + |
| 5. | Aloe derma Cream | + | + | + |
| 6. | Garnier Cream | + | + | + |
| 7. | Joy Sun block | + | + | + |
| 8. | Garnier Fairness | + | + | + |
| 9. | Vaseline-SPF | + | + | + |

| | | | | |
|---|---|---|---|---|
| **10.** | **Cheryl derma Shade** | + | + | + |
| **11.** | **Cheryl Hydro moist** | + | + | + |
| **12.** | **Colour-bar** | + | + | + |
| **13.** | **Cheryl Skin refreshers** | + | + | + |
| **14.** | **Fair & Lovely Cream** | _ | _ | _ |
| **15.** | **Lakme Suns cream** | _ | _ | _ |
| **16.** | **Anti aging Olay** | _ | _ | _ |
| **17.** | **Olay-White SPF** | _ | _ | _ |
| **18.** | **Ponds Cold Cream** | _ | _ | _ |
| **19.** | **Vaseline Total moisture body lotion** | _ | _ | _ |
| **20.** | **Max Factor** | _ | _ | _ |
| **21.** | **VLCC-Fairness Cream** | _ | _ | _ |
| **22.** | **VLCC-Insta Glow Pack** | _ | _ | _ |
| **23.** | **Rains- Aloe Vera** | _ | _ | _ |

In the present study, presence or absence of steroids was checked in face creams of different brands, popularly used by Indian population, on regular basis. Out of 25 creams tested, 11 gave positive tests for steroids confirming presence of one or another steroid.

Most of the creams were acclaimed to be herbal, nonallergic, dermatologically safe and devoid of any side effects. It is hypothesised that such claims made by different companies are not based on any clinical or preclinical studies but because they have adultereted their products with certain steroids which are reputed to have anti allergic effect when applied topically[6]. Perhaps they add steroids to mask the skin itching and allergic effect of certain unsafe

chemicals. Retailers sell all such products without prescription emphasising that all those products are dermatologically safe.

90% of sunscreen lotions, which are supposed to protect a user from UV rays (according to their label and advertisement), were found to contain steroids. Exposure to UV rays is reported to cause sun burns, skin allergy and skin cancer [7] but the protection provided by said creams from sun burns and allergy is not due to some herbal constituent or safe chemical agents but steroids that may provide a temporary relief from allergy due to UV rays.

The wide spread use of fairness creams, antiaging creams, suns cream , lotions and other face creams represent a very serious problem as such products are widely available as non prescription cosmetics preparations in many local markets and shops. Their use over a long period of time is responsible for many cutaneous side effects. Clinically the deleterious effects begin with darkening and coarsening of skin followed by hyperpigmentation, stretch marks, pigmentary disorders (patchy skin and increased pigmentation) and cutaneous infections[8].

Certain fairness creams, anti aging creams and other such products contain illegal compounds that are reported to have damaging effect on skin as well as health [9]. Many of skin cosmetics are reported to contain hydroquinone, corticosteroids and mercury containing compounds, but are still used in many countries in spite of serious health concerns. The most common compounds are high dose steroids[10]. Although steroids can be useful in treating some skin diseases, such as psoriasis and eczema, but unmonitored topical use of high dose steroids can lead to many problems. It has been reported in a study that 8-11 chinese herbal creams purchased without prescription in England contained a powerful steriodal drug used to treat inflammatory skin conditions. The misuse of corticosteroids as skin lightening and antiallergic agent is associated with a range of secondary effects from skin thinning to increased infection rates.

Topical steroid application is associated with potential adverse effects especially if they are used incorrectly. The risk of most of the side effects depends on the strength of the steroid, the length of application, the site treated, and the nature of the skin problem[11]. Chronic use of topical steroidal creams is known to cause thinning of the skin (atrophy), which sometimes results in permanent stretch marks (striae), swelling of fine blood vessels

(telangiectasia), perioral dermatitis (rash around the mouth), enlarged blood vessels (telangiectasia) and temporary loss of pigment in the areas of skin treated. Further it enhances susceptibility of a person to skin infections, skin allergies, making the eczema appear to get worse[12].

The present study concludes that more than 60% of all marketed skin cosmetics that promise to produce instant fairness, glow and brightening of skin contain one or another steroid which can lead to serious side effects of the skin. In view of wide spread inappropriate use of skin creams, the strict control of cosmetics is recommended. They should not be sold in open market but only in registered pharmacies and chemists should only be used on recommendations of a medical doctor and for such period of time as the doctor may prescribe. Further, Health eduction programmed should be developed to discourage the use of non prescription creams with unjustified claims.

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