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Original Research Article

Evaluation of Different Marketed Fairness Face Products Contain Steroids

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Abstract

Steroid drugs for external use can relieve inflammation but cannot kill 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. 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.
Keywords: Steroids, Inflammation, Salkowaski reaction, Liberman Bruched reaction, Liberman reaction.

INTRODUCTION

Skin color is determined by the degree of pigmentation of the skin which depends on the melanin content of the keratinocytes [1, 2]. It is the body's natural protection against solar ultraviolet (UV) radiation. In some cases hyper pigmentation may occur due to physiological or pathological reasons [3].

The color of the skin may have a major impact on an individual's psychological profile and makeup. Thus, there are products available to treat both hypo- and hyper pigmentation [2]. India, being a tropical country has predominantal dark-skinned people. A number of products to enhance 'skin fairness' are available as cosmetic creams in the market and these are advertised widely. Most products are aimed at young women and their advertisements show how use of these creams may result in fairer skin if used for a specific duration of time. The scientific basis of claims made on the 'skin fairness creams' is not known.

Topical corticosteroids (TCs) were first introduced in dermatology in 1952 [4] and are now one of the most widely used therapeutic formulations in practice. TCs creams offer rapid Symptomatic relief in many inflammatory dermatoses, especially in short-term and even its dermatoses, produces an initial clinical improvement. In addition to their anti-inflammatory effects, TCs also have potent antipruritic, atrophogenic, melanopenic, sex hormone- like and immunosuppressive effects on skin and can lead to significant local adverse effects if used indiscriminately [5]. Not only the abuse, even the excessive, regular use of topical fluorinated steroids on the face is associated with eruption that is clinically indistinguishable from rosacea and is known by various names by different authors like, light sensitive seborrheid [6], perioral dermatitis[7], rosacea-like dermatitis [8], steroid rosacea [9], steroid dermatitis resembling rosacea [10] and steroid-induced rosacea-like dermatitis.[11] Since there is no agreement on nomenclature we prefer to use the term of steroidal dermatitis resembling rosacea (SDRR) where it describes the comparable morphology of the disease due to TCs and fairness creams abuse on the face. The main clinical presentation of this dermatosis is diffuse facial redness with or without papulopustular lesions in addition to the development of rebound phenomenon after withdrawal of TCs [9]. This dermatosis is routinely seen in the daily clinical practice, but there is dearth of reports describing it in the medical literature [9, 11]. In addition to steroid rosacea, prolonged use of TCs cause acneiform eruption, hypertrichosis, steroid addiction, and red face syndrome associated with severe rebound erythema,

burning and scaling on the face on any attempted cessation of the application [12].

Another dimension of TCs misuse is its cosmetic application particularly in combination with bleaching creams to make the skin fair among dark complexioned people. In spite of the widely perceived enormity of the problem, there are a few studies from Pakistan to highlight this issue. This cosmetic misuse of TCs is global and has been the subject of studies mainly from Africa [13], Asia [14-16] and even developed countries like the USA are facing this problem [17].

The abuse of TCs is intertwined with fairness creams in our colour conscious society where people are obsessed with fair colour due to various social and historical reasons. Like fairness creams, TCs are readily available over the counter and in most instances, these are used as a depigmenting agent in combination with hydroquinone or mercury based bleaching creams in conditions such as acne, melasma, freckles, and many a times just to improve the dark complexion [18].

MATERIALS AND METHODS

Chemicals

All chemical (Chloroform, Sulphuric acid, Acetic anhydride) and solvents used were of analytical grade.

Experimental Work

Selection of Face Products

For this experiment ten commonly used brands of fairness creams were selected. This selection was on the basis of an interview of 200 patients. Out of the 200 patients studied, 140 were females and 60 males. The age distribution of patients was from 15 to 35 years and 130 were unmarried and 70 were married. The 160 patients belonged to lower and 40 to middle socioeconomic class. Regarding skin colour 150 patients had brown to light brown skin while 50 were fair complexioned. Majority of the patients 95 were students, followed by 65 household workers and 40 were factory employees using these face products in which they were asked the name of the skin fairness product they were using and advertisements shown on television daily at prime time.

The fairness skin products are – Sample 1, Sample 2, Sample 3, Sample 4, Sample 5, Sample 6, Sample 7, Sample 8, Sample 9, Sample 10.

Detection of Steroids by Chemical Tests

Following different 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 [19].

Salkowaski Reaction

A small quantity of cream was dissolved in 2.5 ml of chloroform; to that add 2 ml of concentrated sulphuric acid. 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 taken and dissolved in 2.5 ml 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. First Heat and then cooled the solution. Then added few drops of conc. H_2SO_4. If blue color is appears indicate presence of steroid.

RESULTS AND DISCUSSION

Table-1: Results of different marketed face preparation

S.No.	Marketed face preparation	Salkowaski reaction	Liberman Bruched reaction	Liberman reaction
1	Sample 1	_	_	_
2	Sample 2	_	_	_
3	Sample 3	_	_	_
4	Sample 4	+	+	+
5	Sample 5	+	+	+
6	Sample 6	+	+	+
7	Sample 7	_	_	_
8	Sample 8	_	_	_
9	Sample 9	_	_	_
10	Sample 10	_	_	_

+ = Steroid present; — = Steroid absent

Table-2: Cost of different marketed face preparation

Marketed face preparation	Weight of available market preparation	Total cost (Rs.)	Frequency of application daily as recommended	Average weight/ application	Total requirement/ day	Cost/ day (Rs.)	Cost/ month (Rs.)
Sample 1	7.7 gm	10	Twice	100 mg	200 mg	0.259	7.79
Sample 2	9 gm	10	Twice	100 mg	200 mg	0.22	6.67
Sample 3	4.5 gm	5	Twice	100 mg	200mg	0.22	6.67
Sample 4	6 gm	15	once	100 mg	100 mg	0.25	7.5
Sample 5	15 gm	25	Twice	100 mg	200 mg	0.3	9.9
Sample 6	8 gm	10	once	100 mg	100 mg	0.125	3.75
Sample 7	7.5 gm	10	Twice	100 mg	200 mg	0.267	8
Sample 8	50 ml	45	Twice	1 ml	2 ml	1.8	54
Sample 9	15 gm	58	Twice	100 mg	200 mg	0.77	23.2
Sample 10	60 ml	101	Twice	1 ml	2 ml	3.36	101

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 10 creams tested, 3 gave positive tests for steroids confirming presence of one or another steroid.

Most of the creams were claimed to be 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 [20].

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 [20] 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 [21].

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 [22].

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 [19, 23]. 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 8-11chinese 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 [24].

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 [25].

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 education programmed should be developed to discourage the use of non prescription creams with unjustified claims.

CONCLUSION

In this study, the monthly cost of the fairness creams ranged from Rs. 7 to 101/-. Fairness fixation has been reinforced and portrayed by the media, especially television, by telecasting various advertisements showing self-confidence, success and prosperity all brought on by fairness. Commercial advertising is done to generate increased consumption of the products by the repetition of an image or product name in an effort to associate certain qualities with the brand in the minds of consumers. The advertisements promote an idea that fairness is to be sought. Fairness creams for a country of predominantly dark-complexioned people, where 300 million people are below poverty line, with wide TV exposure may not be ethical, especially as claims are also not substantiated with scientific evidence and they cost money.

After doing this work we have been able to conclude that some of the marketed fairness creams contain steroids even though they claim otherwise. It is also a great concern for skin health as irrespective of the fairness action provided by these creams, our skin is being treated with steroids on a daily basis, which is a potentially dangerous health concern.

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