

The diverse and amazing allergic responses to coloured semi-synthetic fabrics in skin of man, woman and transgenders (MTF and FtM)

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ABSTRACT

We have attempted to determinate how three particular synthetic or semi-synthetic fabrics (that are serge, polycotton and spandex) may interact with the skin of Males, Females or Transsexuals (MtFs and/or FtMs), when these individuals put on these fibers directly on nude epidermis. Transsexuals are to be considered, in this seat, all the subjects that take on purpose the relative opposite hormones to try to change or determinately change their sex, that is Men who take estrogens and Women who take Testosterone to grow transgender. Hormonal influence is to be reputed the chief responsible cause of the occurrence of diverse cutaneous manifestations. Results are extremely suggestive and show that hormonal influence is actually the primary cause of histamine and bradykyne cascade, apt to evoke odd cutaneous manifestations in Man, Woman or Transgender, depending on the type, idest, if the transgender is MtF or FtM.

Key words: Azo dyes; Serge; Polycotton; Spandex; MtF, FtM

INTRODUCTION

Since immemorial times Man has been using natural cellulosic fibers, both vegetal as cotton, kemp and linen and animal, as wool, silk and byssus in order to confect his own accountments, apparel, clothes and equipment.

Organic Chemistry, at the beginning of last century intended to imitate the natural polymers employing patrol derivatives and so began to create a huge assortment of diverse fibers, each of every one quite different from the others, chemically-physically speaking, and researchers used to designate those polymers synthetic fibers tout court [1,2].

More recently these synthetic polymers have been foreseen as backbone of mixed fibers, idest fabrics where natural chains represent the warp of the same natural fibers, which concretely embody the woof, or vice versa: for instance the merino cavalry twill may

result the warp of polyester fibers or the serge that is the denim combined with rayon: and it must be stressed that serge is the main constituent of all clothes of military uniforms.

There is even to be kept in account that manifold are the chemical additives which may be included in these combinaisons of semi-synthetic fabrics (synthetic and natural) in order to bestow some physical attitudes like water repellency, crease resistance, antistatic and fireproof properties, but even chemical stuff as artificial dyeings, products for finissage, as some metallic ions, gums and glues and moreover optical brighteners and sometimes biocides [3,4].

It is unequivocal that too often all mixed fibers may yield to severe cutaneous pathologies, like:

Allergic contact dermatitis; Pigmented Purpuric dermatitis (mainly Schamberg's disease); Polymorph

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erythema (erythema multiforme); Fisher's Pigmented dermatitis (evoked usually by all the azo-dyes used for fabrics); Pustular dermatitis; Phototoxic dermatitis; Hives; Eritrodermie; Folliculitis.

The areas of the entire body which are more prone to contract the aforesaid dermatitis are all those zones that are in closest contact with the same fibers, especially all the regions of the epidermis that are not covered by undergarments that are made up by natural fabrics and so axillae, neck, popliteal fossa, antecubital fossa, trunk and chest.

Female socks and collants are the major responsible causes of allergies and dermatosis in the areas of the internal and posterior thighs and often even the back of the feet [5].

It is suggestive that allergies evoked by sockets in Male are very rare, even if the major synthetic fibrous component is rayon, both in female socks and in male sockets.

It is also necessary to add the fact that most of fabrics and tissues hailing from extra EU countries, where rules concerning the banishment of allergenic stuff involved in the productive cycle of the semi-synthetic tissues are scarce and improper and where the technologies exploited to confect tissues are antique and obsolete so that these are not capable to remove the chemical and risky substances previously used to create the special textiles.

Manifold consumers declare to have contracted allergies and dermatitis after having worn mixed tissues, but too often these supposed allergies and dermatitis are at last simplest irritations [3,5,6].

The principal negative event that can provoke discomfort in man is generally abundant sweating and the typical rushes that could be defined as "calor et rubor", caused by scarce transpiration and certain ways to evaluate the air and liquid permeability of fabrics exist like TexTest Air Permeability, driven by the aids of Tester FY3300, following standard method ASTM D-737, BS 5636; WIRA Liquid Absorbency Time, that records the time required for complete wetting and WIRA Liquid Absorbency Capacity that scores the amount of liquid each of every specimen can hold after a period of immersion) and all these tests are executed always before to put a newest tissue on the international market.

Last but not least, it must be considered the usage of textile colours, which are classified in seven important categories as far as fabrics are concerned:

- a) Acid
- b) Basic
- c) Vat (that forecasts the usage of Sodium dithionate to transform "leuco" bases in diverse coloured nuances)
- d) Direct
- e) Dispersed
- f) Reactive (which contain a cromphore apt to react with the fibrous substrate)
- g) Sulfur dyes (using Cachou de Laval's method based on alkaline sulphide sources or Vidal's method based on mixing aniline with pure sulfur).

And each of everyone must be always chemically linked to a mordant in order to maintain the colouring puissance during the reiterative washing and drying day after day.

Mordants commonly used for tissues are potassium dichromate or metal complexes where generally nickel or cobalt are present in the same molecule.

Almost all the textile colours are azo-dyes and among those, all the ones belonging to the category of dispersed, are allergenic (since they are physically lypophilic and thus may penetrate easily the epidermis barrier), even it is well ascertained that anyway the 40% of all textile colours are allergenic at all when they enter into contact with epidermis and various annexes and mucosae.

Diprise Blues (number 1,3,26,27,9,56,60,106 and 124) are the most hazardous at all.

Here follows Table I where the seven categories of textile colours and their applications to dye diverse fabrics are plotted.

Paraphenylendiammine, banished for dyeing of artificial tissues, is commonly and legally employed for the

Table 1: The categories of textile colours and their applications to dye diverse fabrics

| Type of textile colour | Its peculiar application onto particular fabric |
|------------------------|---|
| Acid | Wool, silk, leather, acrylics |
| Basic | Acrylics, wool, silk |
| Direct | Cotton, leather, nylon |
| Vat | Cotton, rayon, lycra, spandex |
| Sulphuric | Cotton, cellulosic fibers, orlon |
| Disperse | Polyesters and acrylics, spandex, lycra |
| Reactive | Cotton, cellulosic fibers, orlon |

confection of kevlar, synthetic fiber retrievable in bulletproof vests, transsexuals and FtMs (idest females which want to appear male by wearing male clothing and apparel like packing underwear) love to put on directly on nude skin, when in society or for fun.

Aims of my research is to determinate how three particular synthetic or semi-synthetic fabrics may interact with the skin of Males, Females or Transsexuals (MtFs and/or FtMs), when these individuals put on these fibers directly on nude epidermis.

Transsexuals are to be considered, in this seat, all the subjects that take on purpose the relative opposite hormones to try to change or determinately change their sex, that is Men who take estrogens and Women who take Testosterone to grow transgender.

Hormonal influence is to be reputed the principal responsible cause of the occurrence of diverse cutaneous manifestations.

MATERIALS AND METHODS

We have selected three synthetic and semi-synthetic fibers, all strictly polychrome, that are:

Serge; Polycotton; Spandex.

And we have chosen for the experimentations 9 volunteers, as follow:

Three Men, and Specifically

A security guard which wears uniforms made of serge and who has been prayed not to use undergarment made of natural fibers for two weeks (during the summer season at hot temperatures and highest humidity level).

A carpenter which puts on a dungaree made of polycotton directly on his nude body.

A diver who continuously wears wetsuits made of spandex (lycra, elastan, creora).

Three Women, and Specifically

A policewoman who wears an uniform made of serge.

An employee in an industry producing jams who wears a dungaree made of polycotton.

A cyclist who puts on short pant made of spandex.

Three Transsexuals, and Specifically

The first is a transgender, that is he underwent castration, who has taking estrogens, from three years and likes to wear military uniforms.

The second is a transvestite (a will be transgender, taking estrogens only from two months and his hormonal asset could be defined quasi-eunuchoid type) who likes to wear coloured pantyhose made of polycotton directly on nude legs.

The third is a FtM who takes testosterone derivatives and who loves to take on packer, breast binding, laces and guipures made of spandex.

All the 9 individuals were prayed not to take (or to reduce dosage), when possible, Antimicrobials (e.g. Tetracyclines or Fluorquinolones), Nonsteroidal anti-inflammatory drugs (ketoprofen, Piroxicam), Phenothiaines, antidepressants, amiodarone, quinidine

Furosemide or thiazide diuretics, for one week before the experiment and for two weeks, during the same experiments, since the capacity to photosensitize skin these medicaments present is well documented [6].

The areas of the body We have scrutinized after two weeks of experimentations in each of every individual are chest in man, breast in woman, armits, popliteal fossae, antecubital fossae and finally the pudenda.

Ethics

This study was performed on human subjects; thus, all patients were aware of the presence of the study and they were fully informed about the drug and its side-effects.

RESULTS AND DISCUSSION

Results are simplest and there should be some argumentation to delve deeply, as far as men and women are concerned.

Objectively the three men, the individuals who wear serge, polycotton and spandex, keeping on account the diverse rate of sweating of everyone, do manifest after two weeks of experimentations (that correspond to the simple wearing the same coloured clothes, washing

themselves only once a day using an oily bath foam, pH5.5) solely symptoms of hives and folliculitis.

The three women, instead, after two weeks, are hit by simplest erythrodermia and Fisher's pigmented dermatitis.

The most suggestive results are represented by the three transsexual individuals and specifically the two MtFs manifest rushes of Schamberg's disease (especially on the legs) and the FtM is injured by a pustular dermatitis.

All these results may be explained by the fact that estrogens on bilateral castrated individuals increase the histamine production [7] and for this fact, the Schamberg's syndrome is well justified in the first case.

As far as the second subject is concerned, it is well known that estrogens when given to eunuchoids, are capable to inhibit the production of glucocorticoids by the adrenal gland, which is generally deputy to secrete cytokines, histamine and bradikinines and because of this constriction, the production of these three protein neurotransmitters tends to grow, owing to the consumption of estrogens by a man who did not undergo castration, although eunuchoid.

Regarding the third case, the FtM, it is well documented that testosterone, [8] when given to female, primarily tends to increase the histamine-methylase and thus amplifying the production of histamine, and secondarily lets skin grow thicker, oily and more sebaceous and sebum is inclined to induce pustular dermatosis as well.

So, it is unequivocal that hormones play a very important role in the secretion of histamine and occurrence of dermal manifestations in subjects that consume opposite hormones to try to change gender.

Statement of Human and Animal Rights

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

Statement of Informed Consent

Informed consent was obtained from all patients for being included in the study.

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