DERMATOLOGIE PRATIQUE

- La plus forte audience de la presse dermatologique

Dermocosmetics and risk of cutaneous allergies

News and perspectives



Prof Annick BARBAUD* Dr Céline COUTEAU** Prof Laurence COIFFARD**

*Head of the Dermatology and Allergology Department, Hôpital Tenon (Assistance Publique-Hôpitaux de Paris), Sorbonne University, Paris **Laboratory of Industrial Pharmacy and Cosmetology, Pharmacy Faculty, Nantes **S** ubstances used in the manufacturing of cosmetic products are regulated by the European Union legislation. They can lead adverse health effects we must be aware of so as not to fear them. Some ingredients in these commonly used products have allergenic potential. However, there is no reason to advise against the use of cosmetics for people who are not allergic to these substances.

Endocrine disruptors also have caused a lot of ink to flow. The debate particularly concerns UV filters in sunscreens products. Once again, it is not justified to stop the application of sunscreens or others cosmetics, especially since there are formulated products without endocrine disruptors. We need to get the facts and to work with companies to eliminate the molecules that are recognized for their endocrine disrupting effects.

The fear of cosmetics risks should not lead to counterproductive behaviours. We must recognize their fundamental role in the fight against xerosis of atopic dermatitis. We must also be put back in their place in the sun protection, stating that the most important factors in this area are the compliance with the adequate rules of sun exposure and clothing protection. Finally, it is important to warn consumers about the false safety claim of organic and do-it-yourself cosmetics.

Prof Annick BARBAUD

Dermatologist at Hôpital Tenon (Assistance Publique-Hôpitaux de Paris), Sorbonne University, Paris

Current events in contact allergy to cosmetics

Prof Annick BARBAUD, Head of the Dermatology and Allergology Department, Hôpital Tenon (Assistance Publique-Hôpitaux de Paris), Sorbonne University, Paris



The prevalence of contact allergies to cosmetics changes due to modifications in exposure resulting from the introduction of new components, new formulations or new products. Preservatives and fragrances are the most common allergens causing these reaction conditions

nly single-dose systems, which are difficult to manufacture and source of waste, or airless vials would allow to forgo preservatives. The second system cannot be used for all cosmetics. With bulk cosmetics or in conventional packaging, there is a risk of microbiological contamination of the product during storage. So, preservatives are indispensable agents. These substances are a good illustration of the risk of new sensitization generated by using any new molecule. Following the controversy over parabens, which were amongst the least sensitizing conservatives, several alternatives were proposed. Whenever they were introduced, we saw the emergence of sensitization. Successive waves of allergies to preservatives agents have thus been observed. The most important was the epidemic of contact allergies to methylisothiazolinone (MIT). Cases of allergic contact eczema to the new preservative iodopropynyl butylcarbamate (IPBC) start to be reported.

Le MIT, linalool and limonene at the top of the list of allergens

In Europe, the most common – and rising – contact allergies to preservatives are caused by MIT (4.5%) and methylchloroisothiazolinone (MCI)/MIT combination (4.1%)⁽¹⁾. The rates of sensitization are low for IPBC (>1%), methyldibromoglutaronitrile (>1%, rinsing) and formaldehyde-releasers (>1%, decreasing). Allergies to parabens are actually the least common (0.35%).

Fragrances constitute the second most common source of contact allergies to cosmetics. Linalool and limonene are the most frequent fragrance allergens (figure 1). Certain molecules are in the list of ingredients on the packaging and can therefore be identified easily. However, it is more difficult to avoid exposure to fragrance and on the other hand, for allergic person to find a fragrance that suits them. Indeed, the fragrances are composed by many of molecules. The



Figure 1. Limonene gives a lemon or orange fragrance.





Figure 3. Allergic reaction to cocamide DEA.

most sensitizing of them are also those that which are practically the most commonly used. They give the "top note" which is responsible for the first perfume's feeling.

It should be noted that certain allergens are both in cosmetics and in daily use products such as cleaning products (linalool) or water paints (MIT) leading to a risk of recurrent eczema even after cessation of use of cosmetics (figure 2). Concerning excipients, there is currently no emergence of any particular allergen. Coconut derivatives (cocamide DEA), which are found in rinsed products and in cleansing micellar solutions (make-up removers), may be irritating or sensitizing (figure 3). They are poorly tolerated by person with so-called sensitive skin. Dermatologists advise against the use of lanoline even in its extremely purified form, especially in atopic children.

The diagnosis is confirmed by patch test

It can be difficult to distinguish between irritation reactions and allergic reactions

to cosmetics. Certain clinical aspects may be suggestive for allergy. Immediate contact allergies (figure 4) are rare. The commonest allergic reactions are delayed. Their diagnosis must be confirmed by patch tests (figures 3 and 5 to 7). Testing the products brought by the patient is essential. In addition to the European Standard Series and an additional battery, there is a specific cosmetic series. If necessary, these tests can be performed using the separate components provided by



Figure 4. Immediate allergic reaction to a perfume.



Figure 2. MIT is also used in water paint.

Figure 5. Positive patch test reaction to methylisothiazolinone (MIT).

NEWS AND PERSPECTIVES

the manufacturer. If ther is somedoubt, the allergy work-up is completed by a repeated open application test (ROAT), which consists in applying the product



Figure 6. Positive photopatch test reaction to octocrylene.

© A. BARBAUI



Figure 7. Positive patch test reaction to quaternium-15.



Figure 8. The proportion of *S. salivarius* decreases during outbreaks of atopic dermatitis.



What about endocrine disruptors?

Many molecules, including components of certain sunscreens, are suspected to be endocrine disruptor (ED). Current data on the effects of ED come from in vitro studies and studies on animals exposed orally. There are no specific studies on their effects when they are applied to human skin. Therefore, we have to apply the principle of caution.

UV filters, which may be also photosensitizing, are singled out for their environmental impact (Tashiro Y *et al.*, 2013). Hence the interest of a reasoned use of these products in addition to other sun protection measures.

to a limited surface of the forearm twice a day for two weeks.

A protective effect against atopic dermatitis

Several recent studies in children at risk of atopy have shown that daily application of moisturizer during the neonatal period reduces by 50% the risk of development of atopic dermatitis (AD)⁽²⁻⁴⁾. However, the impact of the preservatives of these products on the skin microbiome is subject of debate. Although some believe that preservatives have a negative effect⁽⁵⁾, current arguments to the interest of ointment appear to be stronger⁽⁶⁾. The decreased skin pH and the increased proportion of Streptococcus salivarius after long-term emollient use in infants at risk for developing AD may contribute to the preventative effects of these products in high-risk infants⁽⁶⁾ (figure 8).

References

1. Giménez-Arnau AM et al. J Eur Acad Der-

- matol Venereol 2017 ; 31 : 664-71.
- 2. Horimukai K et al. JACI 2014 ; 134 : 824-30.
- Simpsoon EL et al. JACI 2014 ; 134 : 818 33.
 McClanahan D et al. J Eur Acad Dermatol Venereol 2019 Jul 9.
- 5. Abbasi J. JAMA 2018 ; 320 : 1094-5.
- 6. Glatz M et al. PLoS One 2018 ; 13 : e0192443.

What about new natural, organic and homemade trends?

Dr Céline COUTEAU, Laboratory of Industrial Pharmacy and Cosmetology, lecturer in cosmetology, Pharmacy Faculty, Nantes

Prof Laurence COIFFARD, Laboratory of Industrial Pharmacy and Cosmetology, professor in galenic pharmacy and cosmetology, Pharmacy Faculty, Nantes

In the field of cosmetics, the already growing consumer demand for "natural", "organic" or "homemade" products has shot up after several media campaigns stigmatising synthetic substances⁽¹⁾. We must be careful about the use of these products because natural or organic components does not mean harmless. The systematic opposition between natural molecules and synthetic molecules is unfounded.

t is important to remember that cosmetics have a precise definition. A cosmetic is defined as "any substance or mixture intended to be placed in contact with the external parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them, keeping them in good condition or correcting body odours"⁽²⁾.

Contrary to medicinal products, cosmetics do not require authorization before placing on the market. But the European regulation states that they must be safe for human health and that the manufacturer or the distributor must ensure their safety⁽²⁾ (figure 1). In terms of labelling, the list of ingredients is established in descending order of their weight at the time of incorporation into the cosmetic product⁽²⁾. It is not always easy to decipher, as the ingredients are generally listed as their INCI name (International Nomenclature of Cosmetic Ingredients). Products containing substances labelled as "natural" and "organic" cosmetic products are subject to the same safety requlations as cosmetic products that do not hold this claim⁽³⁾. To be qualified as natural, a product must contain natural ingredients that are obtained and processed using only physical processes. Organic cosmetics must be 100% composed of certified organic agricultural ingredients. There have been various organic certification labels since the 1990s (figure 2).

> "Free from" claims

The multiple "free from" claims, which have been a further reason to justify the



Figure 1. In countries in the European Union, manufacturing and distributing cosmetics is subject to strict regulations.



Figure 2. Some labels that are found on the packaging of organic cosmetic products.

use of organic cosmetics, have been riding the wave of consumers fear over the substances present in conventional products. Several of them have been wrongly discredited, such as macrogols, vaseline, paraffin, liquid paraffin and preservatives like parabens and phenoxyethanol (*figure 3*). However, the alternatively strategies currently used to



Figure 3. Vaseline has been wrongly discredited.



Figure 4. An important presence of ethanol in organic cosmetic products.

preserve organic cosmetics are far from satisfactory. This is the case for the use of ethyl alcohol (ethanol: INCI name "Alcohol" or "Alcohol denat") that is



Figure 5. Mint essential oil is contraindicated for pregnant women.

present in very significant quantities in practically all these products (figure 4). There is a lack of evidence on its longterm security of use. In addition, we know that ethanol enhances transcutaneous penetration of other substances and dries the skin. Also used as a preservative, essential oils are known for their allergenic potential⁽¹⁾. There is, for that matter, an official list of 26 allergens that must be noted on the label when their concentration is greater than 0.001% in non-rinse-off products and 0.01% in rinse-off products. Certain essential oils contain several of these allergens (for example, essential oils of citrus). Others are phototoxic, such as bergamot and St John's Wort essential oils. A certain number of essential oils (mint, oregano, parsley, sage, etc.) (figure 5) are also contraindicated in pregnant or breastfeeding women and in young children in view of the restrictions in place for phytotherapy^(1,4).

How to stay well informed

Céline Couteau and Laurence Coiffard are authors and co-authors of many books and scientific publications on cosmetics. They decided to put their expertise at the service of professionals, students and the general public by creating a blog called "Regard sur les cosmétiques"*.

Everyone can find the information they are looking for about an ingredient or a final product. All data that are supported by scientific references and are a counterweight to rumors and misinformation circulating online.

• Pour en savoir plus sur ce blog* : <u>https://www.regard-sur-les-cosmetiques.fr</u>





Figure 6. "Homemade" cosmetics : questionable efficacity and random preservation.

"Do it yourself": No tolerance or efficacy testing

With regard to "homemade" cosmetics (figure 6) they also may be associated with an allergy risk because online recipes usually contain essential oils. This "do-ityourself" trend also poses a problem for public health. Consumers who make these recipes find them mainly on the internet. The formulations proposed have have not been tested for tolerance or efficacy. There is also the concern of the supply of ingredients. These come from very unreliable raw material suppliers and the consumer does not have the necessary equipment to control their nature and quality. Finally, preservation of "Do it yourself" products is random and their efficacy questionable.

References

 Couteau C, Coiffard L. Pourquoi les cosmétiques bio ne sont pas meilleurs que les autres ? *Actualités pharmaceutiques* 2010 ; 495 : 32-5.
 Journal officiel de l'Union européenne. 22.12.2019. L 342/59.

https://eur-lex.europa.eu/LexUriServ/LexUri-Serv.do?uri=OJ:L:2009:342:0059:0209:fr:PDF 3. Afssaps (actuelle ANSM). Recommandations de bon usage des produits cosmétiques à l'attention des consommateurs. Novembre 2010. 4. https://www.regard-sur-les-cosmetiques.fr/ nos-regards/les-cosmetiques-bio-sont-loin-detre-les-meilleurs-1-2-126/

Use recommendations must be adapted

Prof Annick BARBAUD, Head of the Dermatology and Allergology Department, Hôpital Tenon (Assistance Publique-Hôpitaux de Paris), Sorbonne University, Paris

Recommendations for use of cosmetics must be adapted to the age of the user, the quantity of the product, the amount of skin exposed and the skin application area. Consulting the list of ingredients in their composition is important both for consumers with a known allergy and for physicians for the diagnosis of contact allergies.



• We recommend to buy cosmetics with a list of ingredients under the heading "Ingredients" and not "Composition". This information is not always present on the product itself. It may only be



Figure 1. Example of a list of cosmetic ingredients.

shown on the packaging (figure 1). The ingredients are indicated in the list in descending order, from the highest concentration to the lowest. The first term in the list is generally "Aqua" (water). According to the European Union Legislation, 26 perfume and aromatic composition substances that have been identified as cause of contactallergic reactions to fragrance must be labelled. • When the cosmetic product is used for the first time, it may be useful to try it with in the form of sample (figure 2). We recommend keeping the packaging, the notice or any other document listing the product, for a while after the first use⁽¹⁾. It is also important not to discard the product in case of skin reaction and to bring it to the consultation with the dermatologist.

• Several factors, such as the age of the user, influence the potential risk of undesirable effects of cosmetics. In young children, you must use the simplest formulations and exclude all fragranced products. For the amount of skin exposed and the area concerned, the situation is obviously very different depending on whether the product is applied on the eyelids, on the lips, on the hands, or on the whole body.



Figure 2. It may be useful to use a sample form when trying a new perfume.

NEWS AND PERSPECTIVES



Figure 3. The preservation duration after opening is indicated by a logo.



Shutterstock

Figure 4. It is important to implement all sun protection measures. • To avoid photosensitization reactions, we advised to avoid exposure to natural or artificial ultraviolet (UV) radiation after applying some cosmetics, such as those containing plant extracts, essential oils, ethanol, or such as "eaux de parfum" and "eaux de toilette"⁽¹⁾.

• More generally, proper use of a cosmetic product also includes compliance with the expiry date indicated on the packaging, the duration of preservation after opening and the preservation instructions (*figure 3*)⁽¹⁾.

• Finally, it must be remembered that using sunscreens are not enough to protect against the harmful effects of UV radiation. It comes in addition to other sun protection measures such as wearing protective clothing and safe sun exposure behaviour (figure 4).

Reference

1. Afssaps. Recommandations de bon usage des produits cosmétiques à l'attention des consommateurs. November 2010.

Two Cosmetic Claims on the Way Out

On July 2017, the European Commission published an updated version of a guidance document for making cosmetic claims⁽¹⁾.

n the wake of this publication, the French Advertising Self-Regulatory Organization (ARPP) has updated its recommendations about cosmetic products, specifying that it is scheduled to come into effect on 1st July 2019⁽²⁾. "Free from" claims and "hypoallergenic" claims are called either to disappear, or for some of them, at least meet strict regulatory criteria⁽¹⁾.

For example, we should no longer find cosmetic products labelled:

 "Corticosteroids-free" or "hydroquinone-free"; these two products are banned by European Union cosmetics legislation;

 "Paraben-free"; f parabens are safe when used in compliance with the regulation;

- "Formaldehyde-free" if the product

contains a formaldehyde-releasing ingredient;

 "Preservative-free" for fragrances; they usually contain such a high amount of alcohol that the additional use of preservatives is not necessary;

- "Allergen free/sensitizer substance free"; a complete absence of the risk of an allergic reaction cannot be guaranteed.

However, the "free from" claims or similar claims are authorised when they allow an informed choice to a specific target group or groups of end users⁽¹⁾. For example, "free from animal-derived ingredients" for vegans.

The term "hypoallergenic" can only be used in cases where the cosmetic product has been designed to minimize its allergenic potential. This must be in line with the professional practices and meet some criteria, particularly verifying and confirming a very low allergenic potential of the product through scientifically robust and statistically reliable data. Even in these circumstances, the product must not give the impression that it guarantees the total absence of any risk of an allergic reaction.

Finally, a new claim is introduced: "Sensitive skin", only if two conditions are met⁽²⁾. This claim must be supported by tests on volunteers with a recent and repeated history of functional signs of skin discomfort. There must be no increase in this symptomatology during the use test.

References

1. Technical document on cosmetic claims. Agreed by the Sub-Working Group on Claims (version of 3 July 2017).

 <u>https://www.arpp.org/wp-content/uploads/</u> 2018/11/Recommandation-Produits-cosmétiques-v8.pdf (last consulted on 25th July 2019).

Criteria for Choosing a Cosmetic Product

Dr Céline COUTEAU and **Prof Laurence COIFFARD**, Laboratory of Industrial Pharmacy and Cosmetology, Pharmacy Faculty, Nantes

In the bountiful market of cosmetics, there are formulations recommended for each sales niche or category of cosmetics. The understanding of their composition is essential in order to give judicious advice^{*}.



onsulting the list of ingredients is an important determinant of choice of a cosmetic product adapted to each particular case. This step allows to identify the substances that could prove problematic, especially for consumers who know that they are allergic to one of them. Due to the almost systematic presence of essential oils containing allergenic molecules in organic products, their use must be avoided. They are not recommended in general cases and, particularly, for people with skin weakened by a disease like atopic dermatitis or by cancer treatments like chemotherapy and radiotherapy (figure 1).

It should also be noted that organic sunscreen products, which contain only titanium dioxide and/or zinc oxide, are performed far less than conventional sunscreen products that contain very effective combinations of biological UV filters. Organic suscreens are wrongly presented as being better for the environment. They should not be recommended to the population in general, and to vulnerable populations in particular (children, people under photosensitising treatments, people at risk of developing skin cancer, etc.).

> No ethyl alcohol

We must avoid formulations containing alcohol, which should be declared "public enemy no. 1" and stripped of its cosmetic rights. Ethyl alcohol, or ethanol, should be reserved for a very small number of cosmetic formulations. We give the same advice for daily products (hand gel, shower gel, etc.) and makeup products (BB cream, nail pollish, etc.) that contain UV filters.



Figure 2. Stearyl alcohol is a safe ingredient.

It is important not to confuse ethyl alcohol, listed in the ingredients under "Alcohol" or "Alcohol denat" (INCI name) (figure 2), with other ingredients such as "cetyl alcohol" or "stearyl alcohol". These are both fatty alcohols with emol-



Figure 1. No organic cosmetics for those with atopic dermatitis.

^{*}Find these advices based on scientific evidence on the website: https://www.regard-sur-les-cosmetiques.fr

NEWS AND PERSPECTIVES



Figure 3. Choose the right makeup products for the eye area. Sources: Eye Care Cosmetics.

lient properties whose presence in moisturizing products is welcome. They are among the ingredients of cosmetics that have demonstrated their safety and interest. It is difficult here to draw up an exhaustive list because these fatty alcohols are extremely numerous.

We should choose the simplest formula-

tions - with few ingredients - without alcohol and without allergens. They are adapted for all skin types, including so-called sensitive skin.

> Applying eye makeup safely

The formulation of cosmetics for eye

makeup requires a number of precautions (figure 3). It must take into account the various events that promote the phenomenon of penetration of ingredients in the eye area (blinking, batting eyelashes, tearing, etc.). These requirements are particularly relevant to mascaras, for which the "high-tolerance" formulations should be preferred. The presence of carefully chosen preservatives is a reassuring element for this category of cosmetic, which can easily be contaminated by the microorganisms present on the eyelids.

Online shopping sites

Finally, we must avoid buying cosmetic products available only online (it is easier to make a beautiful online shopping site than it is to formulate and produce highquality products), and we should not make a link between sales price and quality of the products. There are indeed some very good products at

121129

Reservations about the Scientific Basis of Apps



In recent years, we have witnessed the emergence of several mobile apps that offer to detect the presence of unwanted ingredients in cosmetic products by scanning their barcode: Clean Beauty, Yuka, QuelCosmetic, INCI Beauty, etc. Although the intentions is laudable, such tools are unreliable because the ingredients can be accused wrongly. For example, paraffin and silicon, which are which are pointed at as harmful raw materials, are perfectly well-tolerated by the skin and the appendages. Tests performed with one of these apps have also have also showed some inconsistencies, that are the lake of detection of allergens in one of the products tested as well as the random detection of certain ingredients, for example EDTA (which is absolutely not harmful)⁽¹⁾.

The criteria used vary across applications, resulting in discordant conclusions, which can be confusing for consumers. There is no scientific basis for these applications. Admittedly, by indicating the allergens we reduce the risk of allergies, but it is important to take into account the whole formulation. The absence of allergens cannot be enough to validate a formulation.

Reference

1. https://www.regard-sur-les-cosmetiques.fr/ nos-regards/l-application-clean-beauty-la-copie-est-arevoir-foi-d-enseignantes-158/

DERMATOLOGIE PRATIQUE

Édité par L.E.N. MÉDICAL 56, boulevard de la Mission Marchand – CS 50062 – 92418 Courbevoie Cedex Tél. : 01 47 55 31 31 – Fax : 01 47 55 31 32 – E-mail : info@len-medical.fr Directeur de la publication : Dr L. Elgozi

> Directeur de la publication : Pr Camille Francès Maquette : Twice Daily

Dermatologie Pratique est adhérent à la FNIM N° Commission paritaire : 0521 T81273 – N° ISSN 0982-8567

Cet ouvrage est réservé au corps médical. Reproduction interdite sauf accord du Directeur de la publication. la colps medical. Reproduction internate sadi accolo da D Imprimerie de Compiègne 4º trimestre 2019 © 2019 L.E.N. MÉDICAL – Dépôt légal :

EYE CARE COSMETICS COMMITMENTS



Eye Care Cosmetics was born from expertise in dermo-contactology of Laboratoires Contapharm which were the first to develop make-up and skincare products that were tailored to the many and very specific requirements of contact lens wearers. Today, Eye Care Cosmetics is a complete skincare and make-up range that have been developed with high requirements of tolerance and customer satisfaction. The pursuit of excellence has always been part of the genes of Laboratoires Contapharm.

RESEARCH AND FRENCH MANUFACTURING

Eye Care Cosmetics products are made in France respecting the European regulation, which is considered the strictest in the world⁽¹⁾.

• Our Formulations

Laboratoires Contapharm meet very strict quality requirements, and are ISO 22716 certified. The Research & Development team works on innovative formulations, that are rich in active ingredients and characterised by very high tolerance. Customer satisfaction is essential in the production of these formulations. Our clients' safety is our top priority. All our formulations are evaluated, inspected, monitored by a cosmetovigilance department and certified. The raw materials used in our products are scrupulously selected, evaluated and referenced.

• A Role in Supportive Care for Cancer Patients

Eye Care Cosmetics works in partnership with oncology departments and particularly with socio-aestheticians to make life better for patients undergoing cancer treatments. Our range includes products designed to minimize skin side effects of chemotherapy and radiotherapy.

1. https://www.regard-sur-les-cosmetiques.fr/nos-regards/l-application-clean-beauty-la-copie-est-a-revoir-foi-d-enseignantes-158/

OUR PRODUCTS ARE ACCLAIMED

• The opinion of prescribing physicians

A quality survey performed in metropolitan France

on 148 healthcare professionals (dermatologist, allergologists, nurse managers, socio-aestheticians) revealed that (*Survey Monkey* December 2018, extracts):

– Tolerance was judged to be exceptional (graded 9.4/10) and fully met the expectations of patients for 84% of the prescribing physicians surveyed;

 It is the best suited makeup/treatment brand for sensitive, allergic or damaged skin/eyes for 94% of the prescribing physicians surveyed.

• The opinion of users

Eye Care Cosmetics, which is now the leading brand in pharmacies and health and beauty stores, is revitalising the make-up market (Sources: IMS Paratrend, December 2018).

The users commended the quality of the product range.





LABORATOIRES CONTAPHARM - HAMEAU DE VULAINES, 77390 YÈBLES, FRANCE TEL: +33 (0)1 64 25 03 33 – FAX: +33 (0)1 64 06 37 72 – website: www.contapharm.com







HAUTE TOLĖRANCE

PARIS

www.eyecare.fr

LABORATOIRES CONTAPHARM - HAMEAU DE VULAINES - 77390 YÈBLES - FRANCE Tél. +33(0)1 64 25 03 33 - FAX +33(0)1 64 06 37 72 - email : contapharm@contapharm.com - web : www.contapharm.com