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A review of homemade cosmetics based on a study of 150 blogs and their authors

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Abstract

Do-it-yourself methods have been used in many fields (cooking, home improvement, decoration, gardening, etc.) for a long time, but their application to the cosmetics sector is relatively recent and seems to be linked to a number of health scandals. The objective of this work is to analyse homemade cosmetics based on a study of blogs and their authors. We made a study of 150 blogs advocating homemade cosmetics. With only one exception, the blog authors were women, mostly in their thirties, with no specific qualifications or knowledge in the fields of cosmetic formulation or chemistry. The most highly qualified of them (with at least a Master's degree) had studied marketing and management. So, the situation is an illustration of the Dunning-Kruger effect, with authors believing themselves to be qualified in a field wholly outside their own. This leads to scientific falsehoods about, for example, preservatives like parabens and phenoxyethanol. On the contrary, the relevance of the ecological motivation frequently mentioned in these blogs is undeniable.

KEYWORDS

blogs, cosmetics, DIY, social media

Résumé

L'étude de 150 blogs prônant le DIY cosmétique nous a permis de mettre en évidence, qu'à une exception près, les auteurs étaient des femmes, des trentenaires pour la plupart, sans qualification particulière ni connaissance dans le domaine de la formulation cosmétique, ni dans celui de la chimie. Les plus diplômées (niveau Master minimum) ont suivi des formations orientées vers le marketing et le management. Nous avons donc ici une illustration de l'effet Dunning-Kruger, les auteurs s'estimant qualifiées dans un domaine qui n'est pas du tout le leur. Cela se traduit par des contre-vérités scientifiques sur les conservateurs, les parabens et le phénoxyéthanol, par exemple. Il ne faut, en revanche, pas nier la pertinence des motivations écologiques qui sont fréquemment évoquées dans ces blogs.

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INTRODUCTION

The do-it-yourself (DIY) market is a booming sector that has been very successful in recent years. This activity, which can be likened to a return to the pre-industrial era, affects many areas, including construction, as illustrated by the Castors movement created in France after the Second World War. In the context of a housing crisis at this time, the Castors movement helped those who wanted to build for themselves [1–3]. In the 1960s, for the hippie community in San Francisco, DIY became part of a way of life. Its bible was Stewart Brand's Whole Earth catalogue, which provided abundant advice on how to do everything yourself at low cost [4]. Do-it-yourself methods have been used in many fields (cooking, home improvement, decoration, gardening, etc.) for a long time, but their application to the cosmetics sector is relatively recent and seems to be linked to a number of health scandals [5] and to controversies that arose in the early 2000s over parabens and endocrine disruptors, and later over nanoparticles [6–8]. In this context, we wanted to investigate the profiles and motivations of some of the people who give DIY advice online via their blogs. We also investigated which ingredients and cosmetics were being criticized.

EXPERIMENTAL

Blogs offering do-it-yourself cosmetics recipes were collected on the internet, using the Google search engine, with the following keywords: recipes, cosmetics, homemade and DIY. An analysis of the content of these blogs was then carried out to determine the profile of their authors and these authors' motivations.

RESULTS AND DISCUSSION

One hundred and fifty French-language blogs promoting cosmetics DIY were identified and analysed.

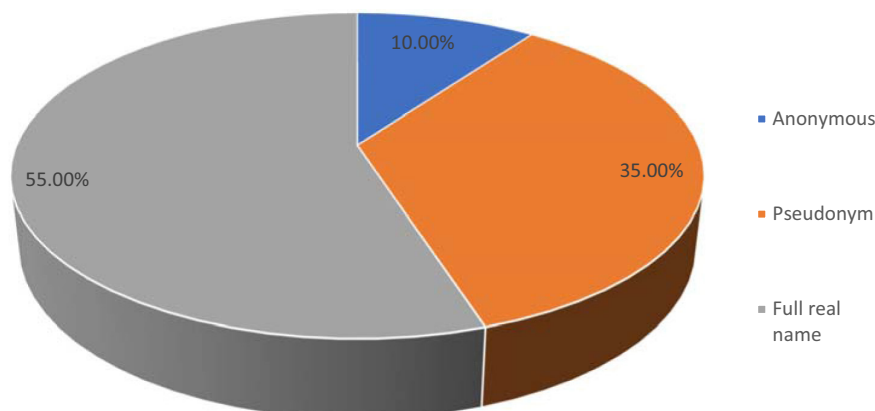


FIGURE 1 Information provided about the blog author's identity.

Blog author profiles

Approximately 55% of the authors of the blogs analysed are fully identified by their first and last names (Figure 1). Slightly more than 35% hide behind a pseudonym and less than 10% of the blogs are completely anonymous. With only one exception, all the bloggers are women. It can be seen that blogging tends to be a solo activity. Only five blogs are run by two people rather than one. The level of education (Figure 2), when given, is representative of the French national average [9]. Based on the available data, a typical profile can be drawn up; this is a young woman in her thirties, who in 40% of cases has a degree of 2 years or more (Figure 2) such as degree and masters, with no connection to the fields of cosmetics or chemistry (Figure 3). Other professions include two yoga teachers, a culinary photographer, an architect, a librarian and a shaman. There are also a few people who define themselves as self-taught.

Motivations expressed

The arguments put forward in favour of homemade cosmetics recipes are first of all ecological concerns (Figure 4). Making one's own cosmetics would contribute to the fight against pollution and is thus in line with a commitment to protect the planet, according to these blog authors (Figure 4). The second motivation, which is not entirely independent of the first, is related to public health issues (Figure 5), with certain ingredients in commercial formulations being qualified as emerging chemicals of concern and perceived as possible causes of serious pathologies such as cancers (4% of blogs studied).

Social media presence

There is a significant presence on Facebook and Instagram, accounting for 78% and 75% of the blogs, respectively

FIGURE 2 Qualifications obtained by the authors of the blogs studied.

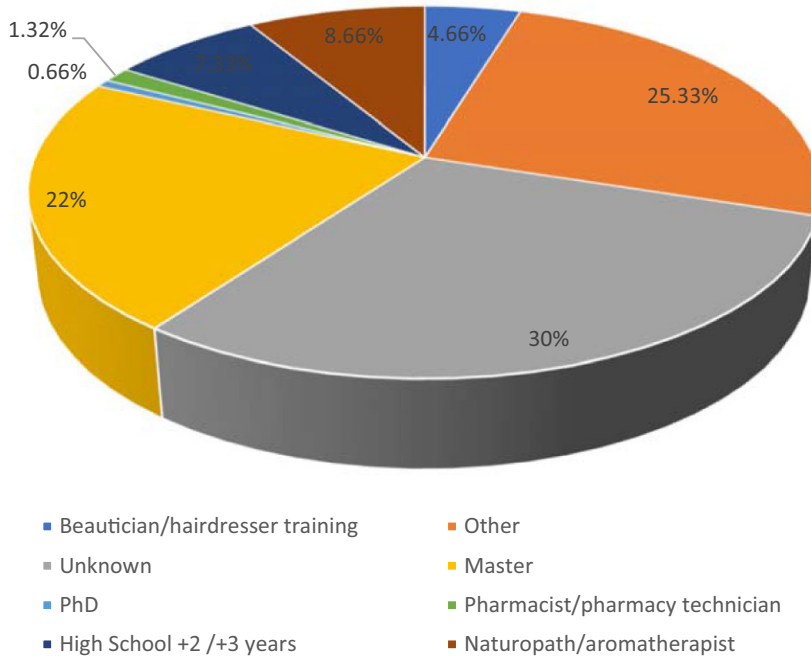
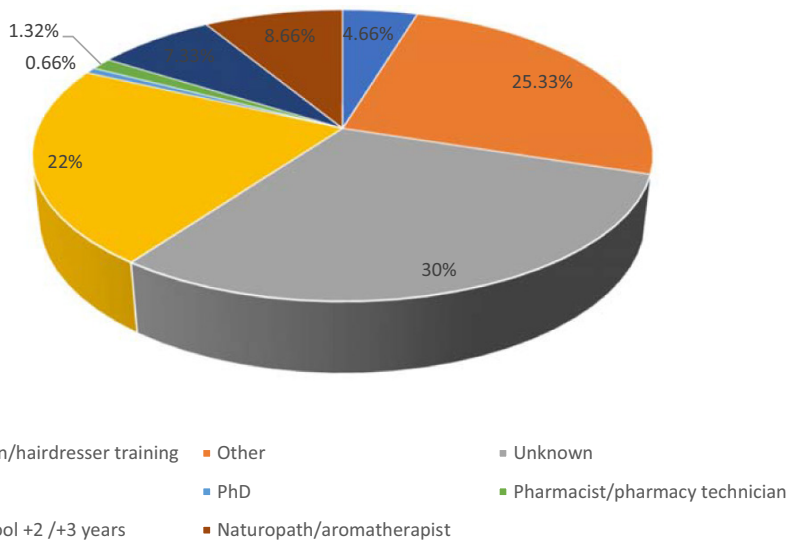


FIGURE 3 Different Master's degrees obtained by blog authors who studied to this level.



(Figure 6). Sixty-four authors of the blogs studied have a LinkedIn profile, only 38 have a YouTube channel with a large number of subscribers and 27 have a Twitter account (Table 1). The average number of subscribers is shown in Figure 6.

Qualifying the practice of cosmetics DIY

In the case of 60 blogs, i.e., 40% of cases, the practice of cosmetics DIY is regarded as a hobby. It is perceived as a fun, enjoyable and convivial activity; an opportunity to spend a pleasant moment with one's children or friends.

Making your own cosmetics generates satisfaction and even pride (Figure 7).

Qualification of the recipes

Cosmetics recipes are considered simple, easy and quick to make. They only require fairly versatile ingredients that are commonplace in the kitchen, such as olive oil, honey or tea. They have the advantage of being minimalist, i.e., containing fewer ingredients (the number of only 3–4 is put forward in only one blog) than commercially available cosmetics. Finally, they are less expensive than

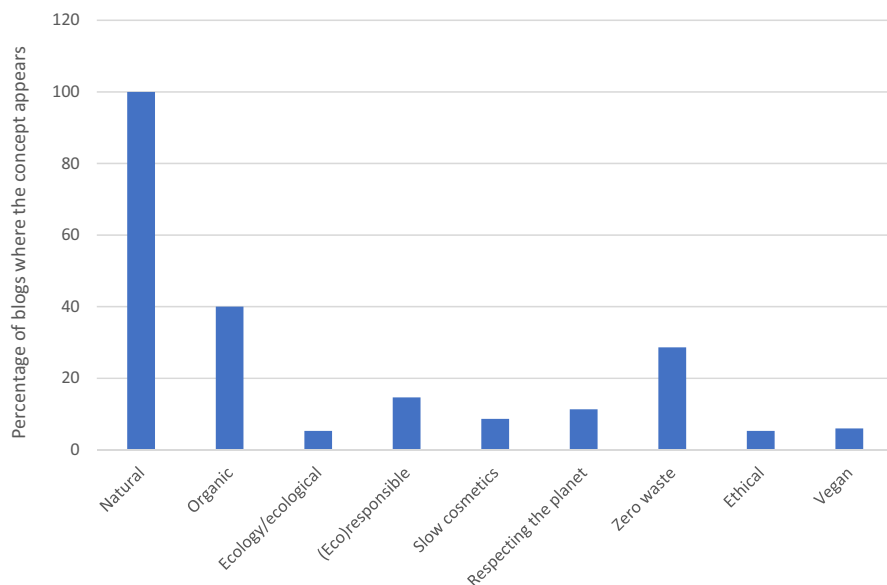


FIGURE 4 Environmental arguments found on the blogs studied.

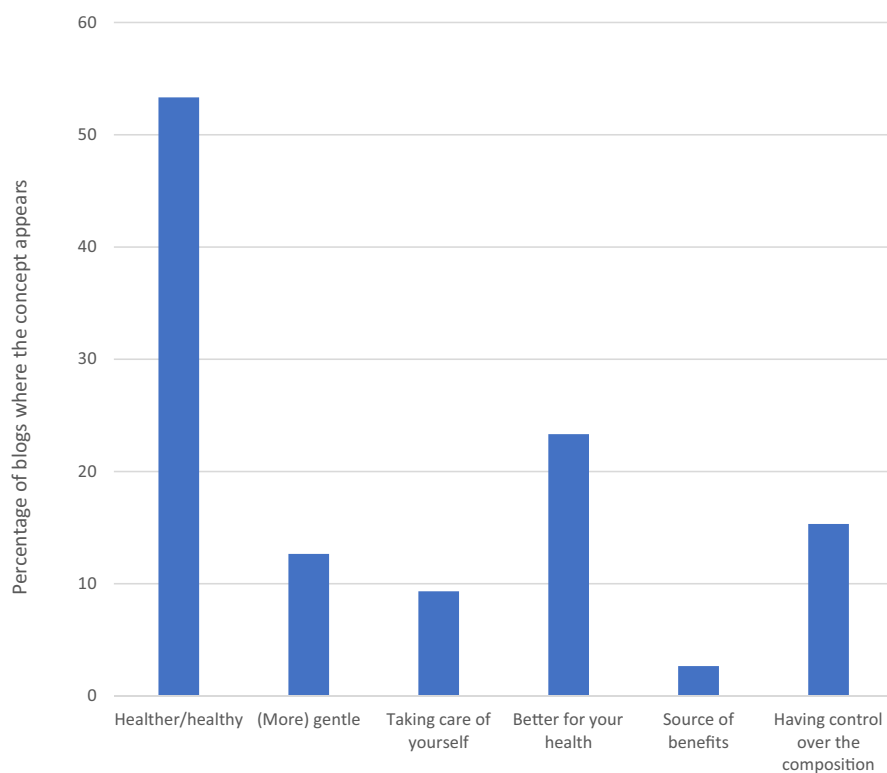


FIGURE 5 Arguments relating to health fears found on the blogs studied.

commercial products, while being just as effective or more so (Figure 8).

Cosmetics ingredients and products that should be avoided

The ingredients most frequently singled out are parabens, with aluminium and its salts and sodium lauryl sulphate also being mentioned less frequently (Figure 9). Entire categories of ingredients may be considered problematic and, therefore, to be avoided in

products applied to the skin or hair. These are mainly “sulphates” (including alkyl sulphates and alkyl ether sulphates), silicones and preservatives (Figure 10). Endocrine disruptors are also cited in more than 25% of the blogs as substances to be avoided. This category is never detailed and it is impossible to know what it covers in the author’s mind.

Apart from 27 blogs that suggest avoiding all commercial cosmetics outright, the types of products identified as dangerous to health and the environment are hygiene products such as shampoos, deodorants and antiperspirants and mechanical scrubs (Figure 11).

FIGURE 6 Average number of subscribers on the main social media of the authors of the blogs studied.

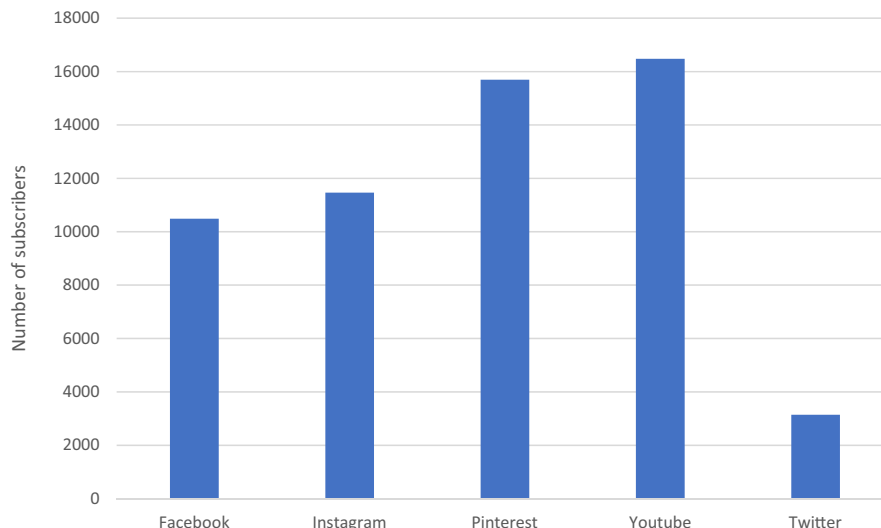
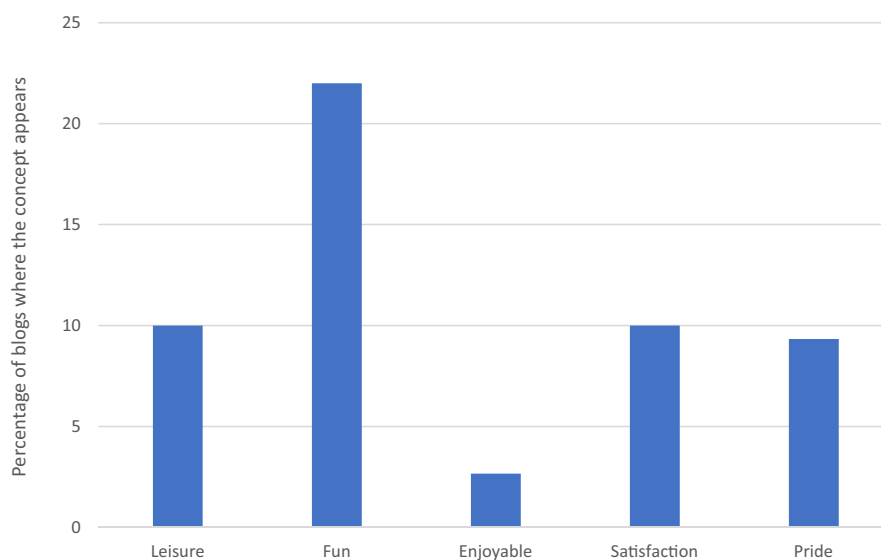


TABLE 1 Social media related to the blogs studied.

	Facebook	Instagram	Pinterest	YouTube	Twitter	LinkedIn
Number of blogs	117	112	98	38	27	64

FIGURE 7 Qualifiers applied to the practice of DIY on the blogs studied.



Only 6% of the blogs have content written by people with some knowledge of cosmetology. They had obtained this through study to work either in a drugstore ($n=2$), as a technician in the cosmetics industry ($n=1$), in a beauty salon ($n=5$), or in a hair salon ($n=1$). In all other cases, the degrees held by the bloggers have nothing to do with formulation chemistry. These include, for example, master's degrees in marketing, management or ecology (Figure 3). We should not lose sight of the fact that more than half of the blogs are run by women without any qualifications. In 6% of the cases, the blog authors simply introduce themselves as mothers, who had a “flash of realization” when

their children were born. Sometimes, the justification of competence is put forward because of a particular pathology such as acne, eczema or Lyme disease. Thus, the situation we have is an example of the Dunning-Kruger effect, which is defined as the tendency for people who are weak in a particular field to overestimate their abilities related to that field [10]. To formulate cosmetics, a knowledge of chemistry and skin biology are essential in order to design products that are safe to use and capable of fulfilling the specific needs of the skin or hair. Ironically, the total lack of knowledge does not prevent the authors of these blogs from attaining the status of micro-celebrities [11].

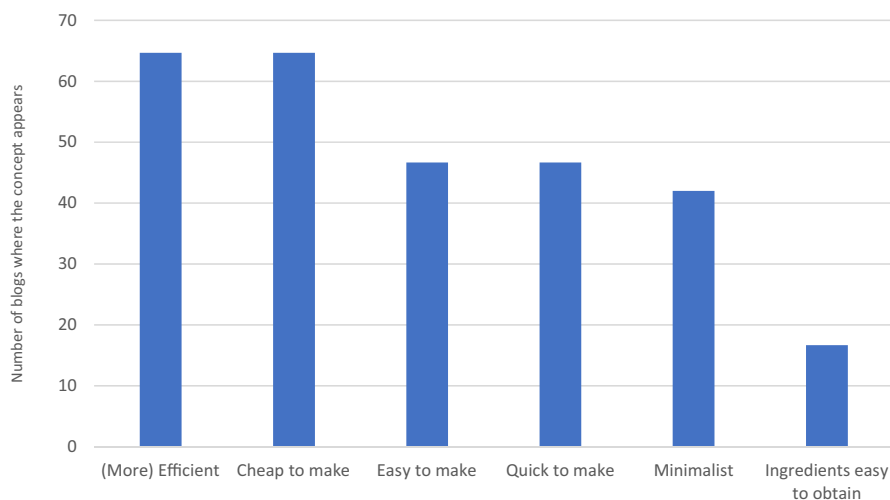


FIGURE 8 Qualifiers applied to the recipes on the blogs studied.

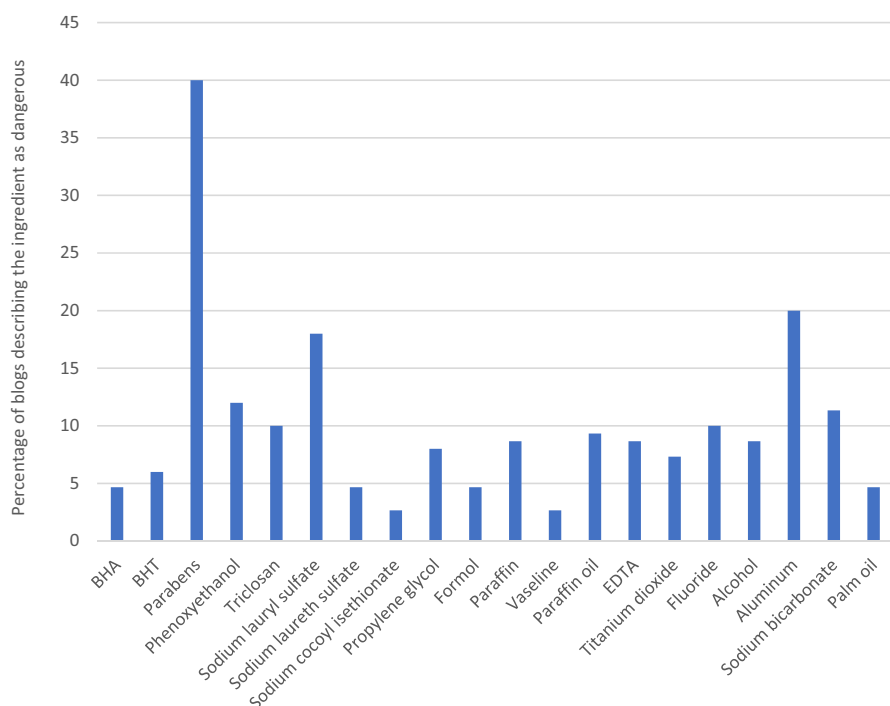


FIGURE 9 Ingredients indicated as harmful by the blogs studied.

A number of authors have named the Instagram platform as a major channel of communication for micro-celebrities, which is confirmed in our study. The present blog authors also promoted their visibility on their YouTube channels and to a lesser extent Twitter. Social media offer recognition to regular users and thus encourage them to become micro-celebrities themselves. As a number of studies have shown, the desire for fame via social media leads young people to focus on appearances, with the sharing of photographs, at the expense of content [12, 13].

Considering the motivations that lead bloggers to propose cosmetics recipes, we can distinguish between motivations of an ecological nature, as commercial cosmetics are considered to be polluting, and motivations relating to health, as the products proposed by the industry are seen

as harmful to the skin or hair and, more generally, as potential causes of irritative phenomena, allergy or illness without more precision.

Moreover, the content of the majority of blogs is not without financial interest, since only 42 of the blogs in this study convey the idea that the author's main driving force is their enthusiasm or a wish to share their experience without compensation. By contrast, in the majority of cases, the blogs studied constitute showcases for a remunerative activity. Indeed, the authors of these blogs often have an online shop and/or propose various other services. They also promote their books, published by larger or smaller publishers (Larousse) or available as e-books. Promotional codes for partner brands are also proposed (Figure 12).

FIGURE 10 Categories of ingredients presented as harmful by the blogs studied.

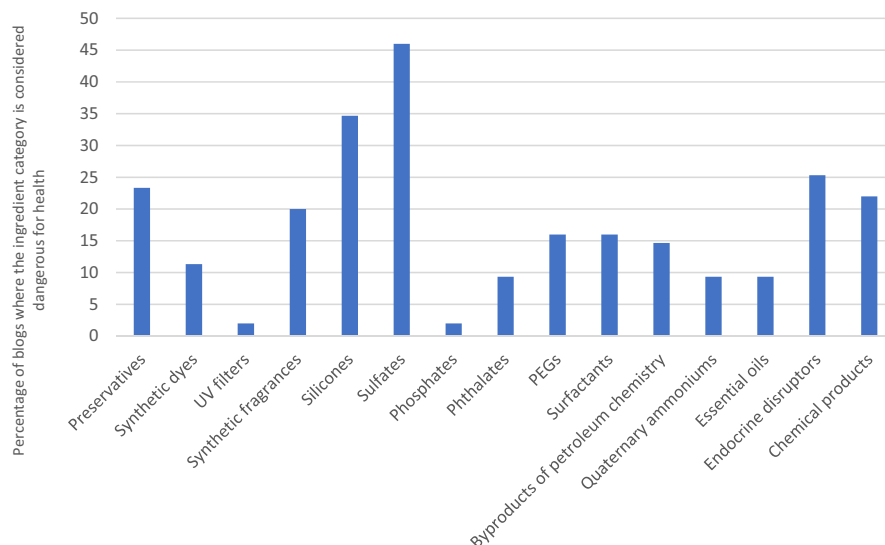
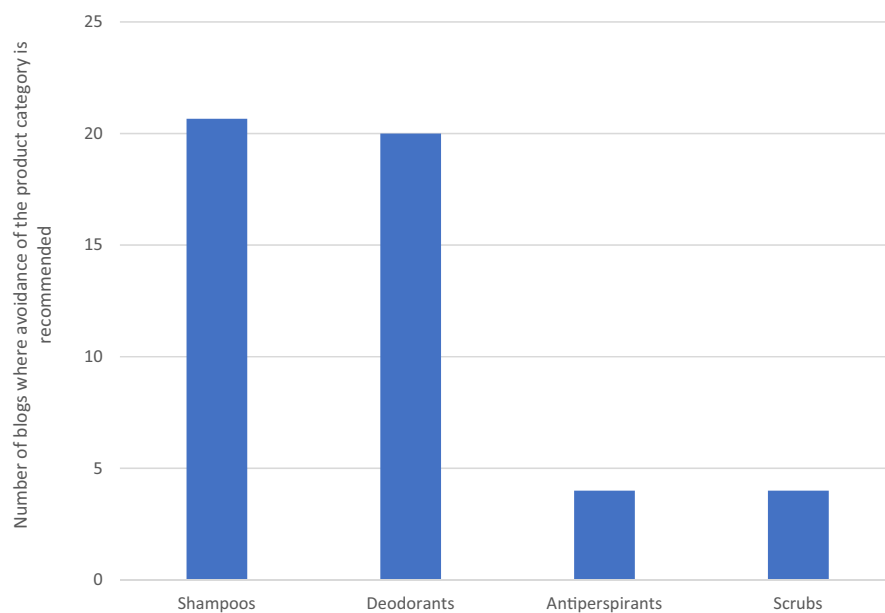


FIGURE 11 Main categories of cosmetic products considered dangerous by the blogs studied.



The obvious lack of knowledge among the bloggers leads to the “wholesale” rejection of entire categories of ingredients such as preservatives, surfactants, and dyes. If we take a closer look at the class of preservatives, we see that parabens and phenoxyethanol are particularly targeted. Yet, parabens have been widely used for over 70 years as preservatives in industries as diverse as cosmetics, food and pharmaceuticals. The frequency of *sensitivity* to such widely used preservatives has remained low and remarkably stable [14]. A controversy that arose some 20 years ago from research that has since been deemed biased [15, 16] has led to a negative perception of the safety of parabens and to their replacement in a large number of products by molecules with a much greater allergenic potential, such as isothiazolinones. More generally, it is now clear that parabens are safe to use in a given formulation [17] up to a total concentration

of 0.8% if a mixture is used, as defined in Annex V of Regulation (EC) N° 1223/2009 [18]. The same type of conclusion can be made for phenoxyethanol, which is considered by the SCCS to be non-hazardous at a maximum concentration of 1.0% [19], the dose limit for use in the European Union. On the subject of preservatives, it should also be pointed out that some of them (parabens and triclosan) are currently considered as emerging environmental pollutants [20]. Another example of confusion among motivations is shown by the category of mechanical scrubbing products. Indeed, these products could constitute an ecological nuisance as their formulation includes polyethylene beads, but their vilification no longer makes sense as they were banned in France by the Biodiversity Act. Overall, however, it is the environmental arguments that are likely the most credible [21, 22].

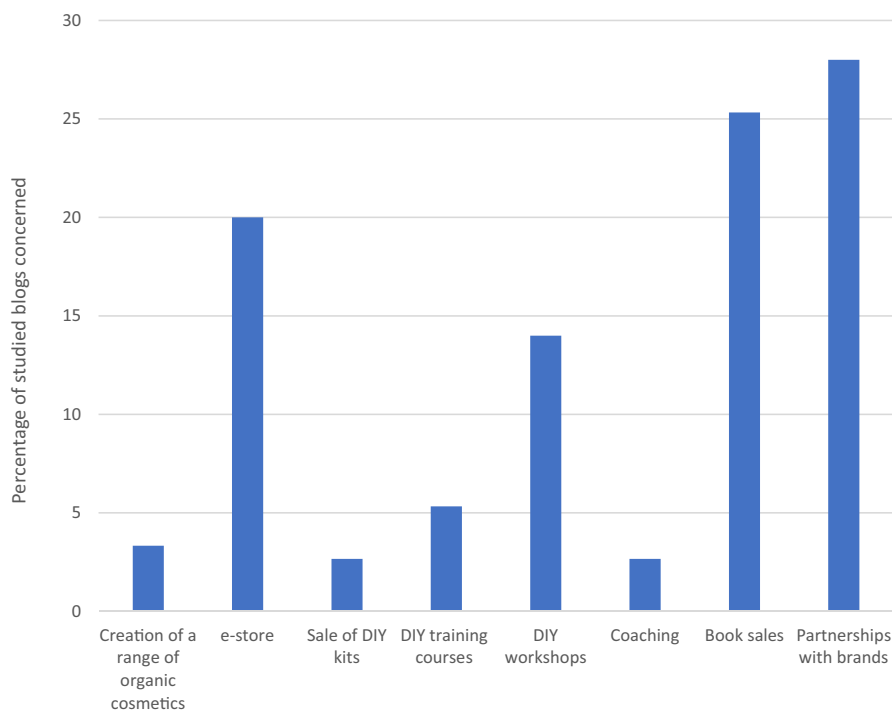


FIGURE 12 Possible sources of income for blog authors.

The desire for formulas with few ingredients is also interesting. As Regulation (EC) 1223/2009 requires an assessment of the interactions that may occur within a formula, it is easy to understand that the combination of a hundred ingredients, as is the case in some commercial formulas, makes it more challenging to do this and multiplies the risks of undesirable compounds being formed.

Concerning surfactants, the situation is more marked. Since it is sulphates that are mentioned, it is understood that these include both alkyl sulphates and alkyl ether sulphates, which are very widely used foaming agents [23]. Avoiding personal care products such as shampoos and shower gels containing sodium lauryl sulphate is legitimate as this substance is extremely irritating, especially as it is present in concentrations greater 5% [24, 25] in these cases [26]. The same cannot be said of alkyl ether sulphates though [27], so they cannot be equated with their non-ethoxylated counterparts.

Aluminium is also frequently mentioned as an ingredient, and, in this case, there is almost systematic confusion between antiperspirants and deodorants. On the one hand, antiperspirants all contain aluminium compounds [28] because, according to the state of the art, there are currently no alternatives to inhibit sweat secretion by a topical application. On the other hand, deodorants, which are free of aluminium do not modify the volume of sweat emitted [29, 30]. These two categories of products should not be confused. As there is no consensus on the matter.

Silicones are mentioned as substances to be avoided by more than one in three blogs. They are accused of

“suffocating the hair”. Many silicone are recognized for their sensory properties and functional benefits in hair care products [31]. So, it would be more accurate to say that they have significantly changed the way users can care for their hair and have done so for the last 30 years or so, since they are ingredients able to provide a protective effect against heat or UV, for example, but also smoothing and detangling (conditioning) effects [32].

The case of fluoride can also be mentioned. It is criticized in the blogs studied and more generally by users of organic cosmetics who see it as a very toxic ingredient. This position is in total contradiction with what we know about the role of fluorides in improving oral health [33]. It, therefore, seems dangerous to promote homemade fluoride-free toothpaste recipes [34].

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