

The Role of Cosmetics During and After the Pandemic Era

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Editor-in Chief's Note:

As many on the front lines of the Corona Virus are called "essential", in my view, this article qualifies as "essential" to you, our readers. It is passionately and knowledgeably written by an articulate, skin and regulatory expert, who resides in Italy, an area significantly reeling from the impact of the Corona Virus. Rarely is such an article so thought provoking knowledgeable and capable of generating "Future-Thinking" as contrasted with the current epidemic of "Present-and Future Reacting."

This article has some contributions by Meyer R. Rosen

The Corona Storm

**Unscheduled events, non-specific tools;
The role of the cosmetic product in the ongoing change.
Present and future.**

In this time of great change, perspectives and habits continue to evolve. The changes have impacted the way we work, buy and communicate. Of pointed priority lies our focus on the relationship with our body, and the way we care for it.

It is easy to predict that cosmetic products play an important role in these changes, since they are solidly entrenched in each moment of our daily life.

In my previous article introduced in this Journal ("Can cosmetic be helpful against Corona?") I explored the different ways in which cosmetic products (often underestimated) have played a primary role in containing the virus. This role focused on the importance assumed by hygiene and cleaning as well as for the protective role that the cosmetics play towards the skin: the largest organ and most responsible for protecting the whole organism.

In our current reality, cosmetic products have a wider impact than in their Pre-Covid role. Having first manifested itself in the moment of our awareness of the outbreak of the pandemic, time has produced significant changes in our attitudes and lifestyle day to day, (said without exaggeration!) and it is foreseeable, maybe, that "cosmetics" will certainly play an important role in the subsequent and future phases as we attempt to reduce the risks and consequences, especially indirect ones, deriving from this great world change. Hold onto each moment. Live in the presence of that moment for in the next, new information morphing into new thinking, some accurate and some not accurate, will certainly emerge.

Keywords: "Change" and "Unplanned"

If it is true that the theme of this long and burdensome moment is *change*, another important keyword is *unplanned*. The "unplanned" spread of a sneaky and deadly virus has been tackled with products and devices created for other uses. The precious FFP2/KN95 masks have been designed and tested to protect site operators from dust, while the similar masks classified as Medical Device have been designed and tested to protect patients in the operating room from doctors' bacteria and not the other way around ...

From a Regulatory view, biocides can only be chemical substances or mixtures, so a device that develops ozone produces a biocide, while a UVC lamp cannot be classified as a biocide. And it can hardly be as a medical device. In general, it is very difficult to frame air purifiers (fundamental tools for contamination control) according to the regulations currently enforced in Europe.

Managing unforeseen events with tools born for other uses is what normally happens when we "sail in the storm"

Managing *unplanned* events by adapting "*inappropriate*" tools is certainly the huge challenge that will allow our society not only to survive, but to emerge stronger and more motivated by this great test. In the areas in which the upgrade of the *inappropriate* tools will be first and foremost are those of production and R&D; but certainly, also the Regulatory issues, definitions and questioning will also have to be profoundly reviewed, given the limits and barriers that the pandemic has highlighted.

Last but not least, innovative and adequate solutions will also

have to be implemented in the psycho-social field, for the management and mitigation of the mass trauma that the pandemic has produced and continues to produce.

We offer this profound (no kidding) question into this complex, articulated and tumultuous context: **what role could, should or will cosmetics play?**

As we write this, the mind begins to wander into territory of what exactly is a cosmetic. Does its definition have to be expanded/refurbished?

Dermatological Aspects: The Skin at the time of the Corona

Respirator-adapted diving masks were not designed to blow air into the lungs. Hospital waiting rooms and gyms were not designed to become Intensive Care Units. And hand sanitizer gels weren't designed to defend against a global pandemic.

The intended use of hydroalcoholic gels was occasional, from the pre-covid era: when we needed to clean hands without being able to comfortably access a bathroom. Therefore, their intended use was occasional, and very limited. Before the pandemic we all had bottles in a bag or in some locker, unused for months, some left over from the previous pandemic threat, the H1N1 of a few years earlier, where in fact there was a first, very short rush to purchase sanitizing gels.

What can happen to skin that is constantly (and sometimes compulsively) exposed to alcohol several times a day? What effects can a hydroalcoholic gel with a high percentage (usually around 70%) of constantly applied ethanol bring? And, what epidemiological data will we be able to find if this extensive use is extended to billions of people, for an (unfortunately) indefinite number of months or years? Our minds speak alongside our writing as we wonder, haven't we been using such alcohol solutions while questions have been raised like, "aren't we creating "super-bugs" for which we have no antibiotics? With "everyone" disinfecting everything in sight, much of the time, what about all that stuff about the importance of our microbiomes?

Furthermore, if we consider the numerous health workers who wash their hands intensely in private life, parallel to an intense work activity during which they wear occlusive gloves, the problem worsens, especially if we extend this exposure to a long time and to a sample of millions of operators all over the world.

Delipidization. Consumer Conduct and Future Products

The use of soap and water is indicated as the best way to eliminate any contamination. However, only as an alternative and in the absence of soap and water, the use of hydroalcoholic gels with an ethanol percentage greater than 60% is suggested, as recommended by various institutional bodies such as the CDC within the FDA ^{1,2,3,4}.

The importance of soap washing has also been well-studied and documented in the previous SARS and MERS epidemics ^{2,3,5}. But the washing must be long and thorough: as was well empha-

sized by the well known Prime Minister who placed so much faith in hand washing by singing "Happy Birthday" twice while evidently, underestimating the risk of contagion, since he was then infected by the virus (and fortunately he recovered from it). Thoughts arise again: the phrase of "Happy Birthday" grows in importance, as this virus will and can shorten the number of birthdays if it gets to you ...

The Reaction of the Global Population to Fear and External Stimuli Must be Considered

There has been (and still is) a strong propensity for the use of hydroalcoholic gels, for reasons that are quite easy to understand: even if washing with soap is indicated as the optimal method. The scientific, medical and political authorities have strongly emphasized the importance of a thorough washing to ensure its effectiveness ¹, while most hydroalcoholic gels promise a drastic and immediate effect. The result was evident: the massive demand for hydroalcoholic gels (in the face of limited availability on the market) occurred mainly during lock-down periods, when non-medical individuals, mostly locked up at home could safely make use of soap and water. (if they could get soap ...)

In reality, hydroalcoholic gels and soap share the same problem for the skin: delipidation. The risk of increasing problems and dermatitis associated with compulsive washing has already been studied and documented even in the same articles that promoted its effectiveness ². **However, it must be importantly considered that the compromise of the skin's hydrolipidic barrier, said to be the largest organ in the body, is not limited to dermatitis: its integrity as a barrier and the ability to protect is compromised!**

For example, a significant increase in the permeation of different categories of substances ^{6,7,8}, and, in particular, with organic solvents (such as ethanol) as there is a promotion of the subsequent migration of water-soluble molecules across the compromised barrier, as is known to happen with certain product preservatives.

The greater permeability to a wide range of substances (the barrier effect is lost), in turn exposes the deep layers of the skin to further insults, generating the conditions of a *domino effect*. Our regulatory definition of "cosmetic" includes the requirement that the topical material applied will not penetrate the skin and thereby gain access to our bloodstream (as a pharmaceutical will).

The fight against the virus has absolute priority, so it is essential to wash our hands thoroughly and frequently, but we must take into account the extensive and long-term effects.

A new look at skin protection will have to be created and spread, and new trends in development are expected

Face Skin in the Post-Covid World (if there is such a thing ...). Among the most important changes, one allows us to identify the images and the pre and post crowd scenes: the covered faces. Without going into the controversy of those who argue that face masks can be useless or even counterproductive due to the false security they can give (but I honestly do not agree with

these last considerations: it is analogous to advising against using car brakes because having them could give the false certainty of always stopping, while at times it can be some malfunctioning ...). In point of fact car brakes are, and will be widely used.

Beyond their very important function, the use of face masks mainly impacts: two aspects: dermatological and psycho-social

From a dermatological point of view, the prolonged use of the face mask produces an occlusive effect on an important part of the skin of the face, with the consequent significant increase in moisture that accumulates due to breathing.

What effect can exposure to high and prolonged humidity levels have? There is a vast literature describing numerous studies, until now mainly focused on the occlusive effect of gloves on the skin of the hands. We can consider them useful, but only partially, since the skin of the face, due to breathing, is subjected to higher temperatures and humidity, as well as face skin being more delicate and sensitive than the skin of the hands.

The most relevant aspects deriving from the exposure of the skin to a humid environment are of considerable impact: the probability (in a very significant way) of incurring dermatitis increases⁹, and the hydrolipidic barrier is compromised, again increasing skin permeation¹⁰. We note, the creation of a new facial skin disorder recently "Maskacne".

Of course, the problems deriving from a hot-humid microclimate that has an impact on the skin of the face can be studied for the development of specific products that can counteract these phenomena, without forgetting that the skin of the face also performs an important function: in the case of accidental contact of the face with contaminated hands, the virus can dangerously approach the upper respiratory tract and be subsequently inhaled. The products enriched with new solutions and new non-delipidizing sanitizing complexes will also be very useful in this area, since they will be able to neutralize the virus in the event of accidental contact with the face: we know well that, while paying the utmost attention, the possibility of touching oneself the face is automatically and unconsciously elevated and is one of the recognized sources of contamination.

Psychological and Social Aspects: New Perspectives, New Habits, New Products

The psychological and social distress extended to billions of people such as that caused by the coronavirus is a new phenomenon and never previously experienced in history. While the drama of illness and death have, (perhaps?) reached relatively low percentages compared to the total population, **the stress, fear and profound discomfort have impacted the life of the totality of human civilization.**

The phenomenon is well known and studied: this Coronavirus (Corona-19) has caused, and is causing, cases of mass depression both among the general population and among health professionals¹¹⁻²⁰, and is further worsened by the inevitable media storm still ongoing today²¹.

Can Cosmetics Help Limit the damage caused by Collective Depression? The Neurological impact of Cosmetics

From this scenario emerges a less evident, but important role of cosmetics as potential tools to limit and contain the states of widespread depression, whose damage to society is both direct (it is a true pathology) and indirect, due to the involvement of a huge number of people.

It is known to everyone (intuitively, mostly) that self-care and cosmetics can help the mood. But is it scientifically proven that they actually help reduce depressive states?

To answer this question, let's explore the impact of cosmetics from a neurological point of view.

Cosmetic Therapy

First of all, a significant effect on mood has been demonstrated in case of cosmetic treatments of aesthetic medicine carried out with botulinum²², but even more significant are the studies conducted in the context of what is called cosmetic therapy on elderly people (and it is well known that with advancing age the exposure to pre-depressive and depressive states increases)²³.

Beyond that work, we focus on the most recent and most advanced studies that employ non-invasive neuroimaging techniques²⁴. Since the 2000s, Near Infra Red Spectroscopy (NIRS) has been used to identify and measure specific brain activities²⁵ and subsequently made it possible to correlate brain activities with the inhalation of fragrances with specific preferences²⁶ and with functions cognitive²⁷. Further, according to more recent studies it has been shown there is a correlation between the ratio *oxy-hemoglobin (oxy-Hb)*, *deoxy-hemoglobin (deoxy-Hb)*, and *total hemoglobin (total-Hb)* measured by NIRS with the depressive state, thereby providing an indication of a statistically significant and reproducible effect²⁸.

The parameters relating to blood circulation and the *oxy-Hb/deoxy-Hb Vs total Hb* ratio were measured in relation to depressed subjects. Following the application of a make-up applied by an operator, further measurements were carried out when the volunteers saw themselves in the mirror after having been made up. The result of the study confirms a significant shift in parameters indicating a reduction in depressive state, and further studies are desired to study in detail the mechanisms by which cosmetic therapy works, from a neurological point of view. **So: yes, cosmetics help fight depression. Cosmetic therapy works.**

Conclusions

Cosmetic products have accompanied the evolution of history and society for millennia. In a society subject to such significant changes as those caused by the Corona they have played an important, complex and articulated role on several fronts. Considering the hygienic, dermatological and psychological problems and criticalities, it is certain that the consolidated role of cosmetics in society will be implemented.

The less obvious aspects such as consolatory role of cosmetics and support to people's mood and the containment of mass depression, no less important than the protection of the skin or the hygienic contribution to the protection of the virus, will help to create opportunities for companies and people who will take advantage of new products, new gestures and habits.

The dynamic companies in the sector will certainly be able to seize these opportunities to create products that, as always, meet the needs and requirements of consumers, especially, and above all, required in a time of great and rapid evolution like the one we are experiencing.

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