

The importance of sensory in topical pharmaceutical products



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ABSTRACT

Modern topical pharmaceutical products must have appealing aesthetics to go along with efficacy to compete in a competitive marketplace. If patient compliance is low because of poor sensory properties for the particular application, the product will not perform as expected. As opposed to common wisdom, changing the emulsifier will have a greater effect on product sensory aspects than altering the emollient components of a topical formulation. Creating a range of emulsions, varying the emulsifier, is the best way for a formulator to find the proper aesthetic match for a particular application, whether it be a topical pharmaceutical, OTC, or commercial skin care product.

confidence can cause repercussions throughout the pharmaceutical company, as the entire organization struggles to determine what is going wrong. Topical pharmaceutical skin care products are expensive, very expensive. The cost may not be seen up front by the patient, but in the end, they are paying a lot of money for prescribed products. It makes no difference what kind of health care system a country has, nor how individual health insurance is administered or paid, the cost of topical products is considerable, and the consumer expects performance. The topical skin care product market is competitive, so companies much differentiate through much more than just performance. Engineering appealing product aesthetics is an excellent way to gain a competitive edge, at the same time, quite possibly, enhancing performance through greater patient compliance. That negative feedback loop described earlier can be turned into a positive one, building confidence for a company's products throughout the range.

THE EMOTIONAL COMPONENT

The angst associated with a skin condition is not merely physical one. It carries with it an emotional component. Along with physical discomfort can come an uneasiness concerning physical appearance. Good skin is associated with good health and is a large component of perceived physical attractiveness. When a skin condition arises, there is a sense of loss and being out of control. There is an analogous situation within the over-the-counter or cosmetic skin care experience. A marketing message is given through advertising and promotion. The consumer responds to a marketing message and purchases a product. The product can excite, disappoint, or fall somewhere in between, long before the claimed activity or effect is experienced. There are desires that are seemingly satisfied through the purchase and use of skin care products. Skin care products can make a person look better, which can give them a sense of wellbeing and help them achieve success as they define it. There is also the aspect of the excitement of the purchase of a new product, and the subsequent initial and continuing use of the product. Purchase of a luxury good has both rational and emotional aspects. The consumer is not only interested in what a product can do. Deep down the consumer is looking for an emotional lift from a product, and is looking for an instant connection. For the skin care business, the hope is that the emotional meets with the rational and a long-term relationship is formed.

A COORDINATED MESSAGE

The promotional message first comes to the eyes and ears, stirring the mind and the emotions. Remember, this is a luxury goods business, whether the products are pharmaceuticals, in the prestige category, mass marketed, or somewhere in between. Later, the product is experienced, both with the sense of touch and the sense of smell. If the promotional message, both the emotion and effect, can be connected to the aesthetics of a product, both the touch and smell, then the product has a much greater chance of success. The purchase and repurchase of skin care products is both a rational and emotional decision. If a product can communicate a single positive message that runs throughout the promotional and aesthetic aspects, it will resonate with consumers. If the message is disjointed, even an excellent performing product may not succeed.

GOOD SKIN FEEL?

Knowing the type, condition, and age of the skin of the target audience as well as the climate is very important for the formulator and marketing professional. Facial treatment products designed to (cosmetically) deal with fine lines and wrinkles, even skin tone, or firm the skin are not necessarily placed on dry skin. The skin on various parts of the body is very different in terms of topography, thickness, and ability to perceive sensations. The condition of older skin will be different than younger skin. As well, the perception of appealing aesthetics may be different from one demographic to the next. Products designed to treat certain skin conditions such as acne or psoriasis should be designed different aesthetically than others. Even if the main goal is treatment, how a product looks and feels is extremely important for good patient compliance.

STAYING POWER THROUGH EMOTIONAL CONNECTION

Great expense is incurred to increase the chance of a successful launch. It is doubtful, though, that a profit is turned on this effort during the initial launch phase. Where the profit is generated is in repeat business, and positive word-of-mouth advertising. Having consumers return for more product on their own, with no cajoling or incentive, is where the money is made. Furthermore, if consumers are so excited that they tell their friends about how much they like a particular product, this is the free promotion that is so desired. Today, this communication is not done merely face-to-face, but more often, and more widespread, by use of information technology, whether in reviews or blogs or tweets. Developing products that generate sustained excitement with the consumer may mean doing things differently, which is always uncomfortable, and may mean offering a product with a higher cost of goods than normal, which is also uncomfortable. In the end, though, the rewards will be reaped.



REVOLUTIONARY RESEARCH

Research presented by Dr. Johann Wiechers at the December 2001 meeting of the Society of Cosmetic Chemists in New York changes the way aesthetic design of emulsions is viewed. The work by Dr. Wiechers, Marie-Claire Taelman, Vincent Wortel, Cornelis Verboom, and Chris Dederen was subsequently published in the IFSCC Magazine, Volume 5, N2 (04-05-06/02), p. 99-105 in 2002 entitled "Emollients and Emulsifiers Exert their Sensory Impact in Different Phases of the Sensory Evaluation Process but How Does One Demonstrate the Absence of such an Influence?"(1). This work included sensory evaluations by Sensory Spectrum headed by Gail Vance Civile. Far from being merely an aesthetic bystander, merely holding emollient oils and water together, the emulsifier proved to be a dominant factor in determining the sensory aspects of emulsions, especially in the crucial areas of appearance, pick-up, and rub-out.

This study evaluated 24 emulsions using 4 emollients with measured statistical differences in skin feel and 6 different emulsifier systems. The emollient phase volume of these emulsions was held constant, and the emulsifiers used at the recommended use levels for stability. Sensory Spectrum, Chatham, NJ USA, using the Spectrum Descriptive Analysis evaluated the emulsions on 31 different attributes within the categories of Appearance (3 attributes), Pick-up (4 attributes), Rub-out (8 attributes), Immediate After-feel (8 attributes), and After-feel after 20 minutes (8 attributes.) Each expert evaluator gives an assessment as to the level of Stickiness, Spread-ability, Integrity of Shape, and so on with a number from 0 to 100 based on where it is perceived to fit within the scale for each attribute given low and high standards for the particular attribute. A rigorous statistical analysis was performed doing paired comparisons on each of the attributes.

The amazing result of the study was that the predominant contributor to variance in skin feel could be attributed to the emulsifier selection. Contribution to skin feel attributed to the emulsifier was pegged at 74%, whereas emollient selection showed to control 12% of the total variance. Large portions of the emulsifier skin feel control was seen in the important Appearance, Pick-up, and Rub-out phases. The After-feel numbers appeared to more directly related to emollient selection than the earlier skin feel attribute numbers, but with still a healthy contribution from emulsifier selection seen. The message of this study is clear. In order to fundamentally change the aesthetic properties of a topically applied emulsion formulation, the emulsifier system needs to be changed. A wide range of emulsifier systems should be evaluated and made into emulsions in order to find the proper aesthetic properties for the particular application. Most formulators of emulsions are changing emollients thinking that they will fundamentally change the way the product feels. Though this approach is easier than changing emulsifiers, the desired end result is rarely reached.

THE NEW APPROACH

The optimum approach to creating appealing topically applied formulations is to have an aesthetic vetting process with all interested parties through the formulation of a series of emulsions using different types of emulsifiers, with the emollient phase constant. Once the field is narrowed based on how closely the particular candidates are to the aesthetic ideal for maximum appeal, an assessment of other factors which may influence the final decision can be performed. These other factors can include additional performance benefits a particular emulsifier system may offer on the skin, ease and familiarity of formulation and manufacturing, price and security of supply, and compatibility with other materials that may be included in the formulation.

Alteration of the emollient system can then be used where it does have some effect, in the After-feel category. The emulsifier is being chosen based on the large contribution it has on Appearance, Pick-up, Rub-out, as well as the moderate impact on After-feel. Then the emollients can be mixed and matched to adjust the After-feel characteristics of a formulation. In addition, if there is a featured oil soluble active ingredient to be included, there is the opportunity to blend the oil phase in such a manner that delivery to the upper layers of the skin is enhanced. One of the great parts about knowing that it is the emulsifier that drives aesthetics is that the formulator can know that the oil phase can be adjusted for maximum delivery to the skin, or for any other reason, without fundamentally changing the overall aesthetic experience of the formulation.

Such critical elements as fragrance and packaging development can start sooner than normal if an accelerated aesthetic design approach that gets the formulation closer to the ideal sooner is taken. By changing the correct variable, the emulsifier, up front, not only can the resulting formulation be closer to the ideal for the



particular product, the process can be faster with less risk and overall cost.

CONCLUSION

Aesthetics **do** matter, in topical pharmaceuticals, and in all of skin care. A product will not work if left in the container or used sporadically because the aesthetics are not pleasing or inappropriate for the application. Changing the **emulsifier**, rather than the emollient system, is by far the most effective tool for altering the aesthetics of topical formulations.

REFERENCE

1. J Wiechers, M-C Taelman, V Wortel, C Verboom, and J Dederen, *IFSCC Magazine*, 5(2) 99-105 (2002).