

Skin analysis – customer interview to complement measurements

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While subjectively rating a cosmetic product the human brain processes a multitude of sensory stimuli. Though, subjective ratings and objective skin analyses taken by measuring devices are not always identical.

The development of skin care products today generally involves skin analyses taken with measuring devices. Just to mention some examples: there are readings of the skin hydration, lipid content, trans-epidermal water loss (TEWL), elasticity and skin smoothness. Above all, comparative values with other products and before-and-after-readings are taken.

An important supplementary tool here is a simultaneous interview of the consumers in order to consider practical influences which cannot be collected with measuring devices. This procedure sometimes discloses differences between subjective perception and objective readings. This also is a familiar situation in beauty institutes when besides the treatment a skin analysis is taken with specific devices, as subjectively the physiological effect is felt instead of its physical reading.

Thus, an increased TEWL is only felt through its subsequent effects. The skin will be dehydrating, the skin surface thus becoming rough and more sensitive to external influences and allergenic substances. Though, the TEWL only rarely is measured in beauty institutes. Yet, even obviously simple measuring procedures like corneometry (skin hydration) and sebumetry (surface lipids), which altogether also allow conclusions regarding the TEWL, sometimes offer interesting insights.

Measuring the skin hydration

Anyone is able to visualize moist or dry skin or low-fat and oily skin for instance and especially skin hydration is known which can be measured with specific devices within a few seconds. There are however various mechanisms influencing the skin hydration. Water-soluble active agents which retain moistness due to their hygroscopic properties, oils and waxes which reduce the loss of hydration due to their occlusive characteristics as well as filming agents which reduce the evaporation of water due to their specific chemical structure

and in addition to that, retain water superficially. Both the last-named groups of active agents additionally have natural smoothing effects with a simultaneous reduction of minor wrinkles. As the consumer is highly interested in these features he subsequently realizes the effects accordingly.

...suggesting a deficiency

A longstanding practical experience shows that whenever the smoothing effect is reduced instinctively the skin hydration will be associated with.

Just to add a typical example: When switching from strongly occlusive mineral oil-containing to physiological skin care products supporting the natural skin regeneration there will subjectively be noticed a sensation of dryness of the skin during the first several days. Analyses taken show by contrast a normal to increased skin hydration. The missing soft mineral oil film in this case suggests a deficiency which will be associated with dry skin.

It is helpful here to show the customers the readings of the measuring devices in order to convince them of the objective effects of their new skin care products.

A further experience of the long-term use of occlusive mineral oil-containing creams is that the skin feels very dry after a period of 1 to 2 days after stopping their application. In this case the artificial protective film is missing and the skin has lost its capacity to build up an adequate natural protection. This effect can be physically measured resulting in low skin hydration readings. Readings and the personal feeling will correspond here. The general conclusion drawn by most persons in this case is that they have a natural tendency to dry skin which in fact is not appropriate of course. As there is a positive sensation felt immediately after applying the surface film again, there is not much reflection on selecting alternative skin care products. Above all, this applies for the use of skin care products with vaseline

(petrolatum) or comparable products as their essential ingredients.

Significance of long-term effects

An important topic of a competent consultation in the beauty institute is the information that the spontaneous subjective feeling after the application of cosmetic products will not allow any conclusions on the long-term effects which are essential for the health maintenance of the skin and the prevention of skin problems. In this case measurements within a period of 24 and 48 hours after stopping the application of a product may be informative. A successful skin

care product still significantly shows its skin care effects within a period of several days after ceasing to apply the product.

Varying effects

Essential for the measuring and the sensory perception is the structure of skin care products. O/W emulsions, W/O emulsions, DMS (creams containing water, free of emulsifiers), liposomes, nanoparticles and mineral oil free oleogels (without water) provide specific properties and will show different effects within a certain period of time. The following table will provide an overview.

Table: The different products were applied in the morning and in the evening. With exception of the water free oleogels all the products lead to an increase of skin hydration after their application. Long-term effects are impossible to be noticed after the first application of a product, neither subjectively nor with the help of measuring devices.

| Reading taken | Skin hydration | | | | | | Sebum/Lipid film | | | | | | TEWL | | | | | | Skin smoothness | | | | | |
|--------------------------------------------------|----------------|-----|-----|-----------|---------------|---------|------------------|-----|-----|-----------|---------------|---------|------|-----|-----|-----------|---------------|---------|-----------------|-----|-----|-----------|---------------|---------|
| | O/W | W/O | DMS | liposomes | nanoparticles | oleogel | O/W | W/O | DMS | liposomes | nanoparticles | oleogel | O/W | W/O | DMS | liposomes | nanoparticles | oleogel | O/W | W/O | DMS | liposomes | nanoparticles | oleogel |
| 2 hrs after application | + | + | + | +/- | + | +/- | + | + | + | +/- | + | + | - | - | - | + | - | - | + | + | + | +/- | + | + |
| 12 hrs after application | + | + | + | +/- | + | + | + | + | + | +/- | + | + | - | - | - | +/- | - | - | + | + | + | +/- | + | + |
| 4 weeks application | + | + | + | + | + | + | + | + | + | - | + | + | - | - | - | - | - | - | + | + | + | + | + | + |
| 48 hrs after stopping 4 weeks application | - | +/- | + | + | + | + | - | +/- | + | - | + | + | + | +/- | - | +/- | - | - | - | +/- | + | + | + | + |

With exception of the water free oleogels all the products lead to an increase of skin hydration after their immediate application as the skin is externally supplied with water. About 2 hrs after the application the surplus water of the products will be evaporated. Only now it is recommended to take measurements. With oleogels the hydration gradually increases at a slow rate whereas products containing water either show the same levels or only slight decreases. Liposomes and nanoparticles have a long-term effect (about 3 to 4 weeks), as they provide linoleic acid for the formation of

ceramide I whereas O/W emulsions lose their effects after ceasing to apply the products. Regarding the sebum/lipid content and skin hydration DMS and oleogel show successful long-term effects. By contrast, O/W creams show a relatively fast decrease of efficacy after ending their application. The TEWL increases again after stopping the O/W cream and the skin feels dehydrated. In case of W/O emulsions this effect is somewhat decreased due to the different type of emulsifiers. Liposomes only have little influence on the lipid

content however they cause a noticeable soft feeling on the skin.

The TEWL values frequently reflect the total of all the effects on skin hydration and lipid film however in reverse order: The increase of skin

moistness (+) and of the lipid film (+) is noticeable by the decrease of the TEWL (-).

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