

Skin cleansing – selecting the appropriate product

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Skin cleansing preparations range among the essential skin caring products. They are part of the daily hygiene and a prerequisite for further skin care measures. Hence, there is a great variety of different preparations and applications. The following overview offers assistance in selecting the appropriate product.

The oldest known skin cleansing products of course are water and vegetable oils. Water can dissolve and remove hydrophilic substances and accordingly, oils will take care of lipophilic substances. A simple combination of water and oil would be the ideal measure seen from the physiological point of view, particularly for problem skins. Unfortunately, however, water and oils are not mixable and products with the indication to shake well before use do not sell well. Popular today are easy-to-use cleansing products which are able to remove water and oil-soluble as well as non-soluble dirt particles and also loose scales on the surface of the skin. For this purpose, additional surface-active agents are used which are able to emulsify oils and lipids in water and additionally provide adequate dirt-removing properties.

Soaps & tensides

The oldest known products in this field are soaps made of sodium and potassium salts of long-chain fatty acids. They are still used today in form of soap bars. Soaps with traditional ingredients show two disadvantages: the pH level of their solutions ranges between 8 and 10 and they react with the calcium and magnesium salts (hard water) which are dissolved in water into non-soluble "lime soaps" leaving unsightly residues in the washbasin. Hence, many products and above all liquid soaps contain synthetic tensides which are also compatible with hard water and whose pH level can be adjusted between neutral and sub-acid.

Additives in products

Besides detergent soaps or tensides, cleansing products may contain a great variety of additional components.

Superfattening agents like vegetable oils, liquid waxes (jojoba oil e.g.) or long-chain

acids (stearic acid, palmitic acid) refatten the skin and are used to avoid increased dehydration of the skin. They are frequently found in baby and cream soaps.

A large number of **refattners** consists among others of surface-active polyethylene glycol derivatives (PEG compounds). Caution is recommended with sensitive skin though as these compounds leave a pleasant feeling on the skin, however, just like emulsifiers they may interfere in the build-up of the lipid bilayers in the skin barrier. Persons with dry skin and susceptibility to atopic dermatitis should avoid these substances.

This specific group of individuals as well is recommended to refrain from **foaming products** as they also frequently contain short-chain detergents like e.g. lauryl sulfate. By adding **foam stabilizers**, the foaming properties can still be intensified which may be a welcome feature for baths. Shower products which are additionally expected to be used for hair care purposes may contain **conditioners** which avoid electrostatic charging after the hair drying. The structure of conditioners is similar to refattning agents; often they also consist of quaternary ammonium salts (quats) which can be easily identified in the INCI by their suffix "...onium".

Anti-oxidants almost are omnipresent components and are used to protect ingredients with a high affinity to atmospheric oxygen. In products where refattning or lipid substances remain on the skin after the cleansing process, as e.g. with cleansing milks, tocopherol and ascorbic acid esters are to be preferred to phenolic substances like BHT. The more water the products contain the more frequently **preservatives** are added. Because of their allergenic potential they should not remain on the skin as the cleansing process weakens the barrier function of the skin and thus facilitates the penetration of preservatives into the skin. In the meantime there is a whole range of alternative products on the market which are

free of preservatives and whose so-called water activity is low and thus prevents the reproduction of micro organisms.

In deodorant soaps bactericidal substances should stay on the skin to prevent body odour. This also applies for **perfumes**. There are higher concentrations used in order to cover body odour and to produce a particular feeling of well-being whereas soaps and cleansing products designed for the sensitive skin rather contain small amounts of perfumes or are even perfume-free.

Chelating agents frequently can be found together with anti-oxidants with the task of binding traces of heavy metals. Some of the heavy metals accelerate the oxidation of sensitive product components by the formation of radicals. A typical chelating agent is EDTA (ethylenediaminetetraacetic acid) in form of sodium salts. Further additives **control the consistency** of the product – which is an important property for liquid soaps. In this case frequently polyethylene glycol derivatives are combined with sodium chloride to thicken the product. A **low pH level** is achieved by adding acids as for example citric acid; applying a citric acid buffer keeps the pH level stable in the long term.

Most of the cleansing products contain **dyes** which compensate possible shades of colour in raw materials and which improve the visual acceptance of the products. Specific effects as e.g. pearl-like glistening can be achieved by adding **pigments**. In cases where resistant dirt particles are to be removed, or an additional peeling is desired **abrasives** are applied. Abrasives may consist of tiny plastic particles, jojoba beads (wax) or meal made of fruit stones. While abrasives with surface-active agents are used in cleansing pastes, typical peeling products should contain a combination of abrasives together with a cream base as they are simultaneously used for the care of the skin. For bad or acne skin it is recommended to use cleansing products which will not leave any residues particularly not around the orifices of the sebaceous glands; keratolytic and **anti-inflammatory agents** and abrasives may have an additional positive effect here.

Tolerance

There are significant differences in the tolerance of surface-active agents:

Short-chain surface-active agents like sodium lauryl sulphate react with the proteins and thus may have irritant effects in case of prolonged exposure.

Long-chain surface-active agents like for example **sugar tensides** are well-tolerated though.

The characteristic smell of surface-active agents frequently is covered by **perfumes**.

Products free of tensides

In cases of dry skin, barrier disorders or atopic skin it is recommended to use cleansing milk which can also be applied without water as this largely reduces the loss of epidermal lipids. Particularly for atopic skin emulsifiers and tensides have counterproductive effects. For these applications there are cleansing milk products on the market which are free of emulsifiers and tensides. Naturally occurring membrane components like phosphatidylcholine take over the binding function between water and oil phase here. They provide the skin with lipids and thus simultaneously have skin-caring effects. Specific **moisturizing agents** like glycerol, glycols and sorbitol will not only increase the skin hydration but also have a biostatic effect with the result that potentially sensitizing preservatives are not needed in the product. The lipid content enables the gentle removal of make-up and camouflage.

High lipid contents are characteristic for oil baths which also are used in cases of sensitive and dry skin. However, the composition is important here: simultaneously contained emulsifiers will increase the cleansing effects however reduce the skin caring effects. Replacing the emulsifiers by phosphatidylcholine and/or substances with affinity to keratin will largely improve the fattening potential.

Some specific skin cleansing products are also free of tensides; it is referred here to cleansing masks based on healing earth which above all are applied for the cleansing of oily skin or to enzyme peeling masks which, besides the clay base additionally contain vegetable extracts with enzymes as e.g. from the pineapple or papaya. In contrast to the mechanically working peelings with abrasives (see above) the superficial scales are removed here with the help of enzymes. Enzyme peelings are especially recommended for the skin susceptible to acne and are a gentle alternative to fruit acid peelings which frequently have irritating effects on the skin.

Exaggerating hygiene

Excessive cleansing **dehydrates the skin** which enables an increased penetration of the pathogenic germs and allergenic substances naturally occurring in our daily environment.

It is recommended to pay specific attention to a gentle skin cleansing in **sensitive areas** like the anal area as the moist microclimate supports bacterial infections as well as associated skin barrier disorders.

Dr. Hans Lautenschläger