

9 Preparative treatments

A skin treatment may consist of the application of preparations, a manual mask or massage, or an instrumental procedure such as ultrasound or radiofrequency.

In a treatment sequence, different applications are carried out one after the other or linked together.

The most important preparative applications are:

- Skin cleansing including baths and peeling
- Toning the skin
- Masks and packs
- Massages
- Final and home care

The sequence varies depending on the condition of the skin and the active agents and media to be used. If the massage is done with nourishing oils, a following mask is not very effective because the skin is already saturated. Then it is better to massage after the mask. Therefore, the mask media are often also used for massage.

The purpose of toning is to make the skin receptive to the active agents of the mask. Often, the active agents of the mask are already used. In this case, the mask only temporarily increases the occlusivity. Depending on the richness of the previous steps, the final care can be dispensed with. It is similar to the subsequent home care and is already explained elsewhere under the general aspects of skin care.

By far the most important products are skin cleansing products. They are part of daily hygiene and are a prerequisite for further care measures. Their structure and areas of application are correspondingly diverse.

9.1 Skin cleansing

The list of substances that are dumped on the (facial) skin every day is long:¹⁾

Physical substances: Skin barrier substances, skin cells, crusts, glandular secretions such as sebum, sweat, earwax, tear fluid and saliva. Curiously, the majority of them are part of the skin's self-cleansing programme.

Natural environmental substances: Mineral dusts (clay, silica, salts, etc.), plant substances (hydrocarbons, fats, waxes, pollen, etc.), peroxidised hydrocarbons such as peroxyacetyl nitrate (PAN).

Reaction products of skin components with gases such as oxygen, ozone, nitrogen oxides, sulphur dioxide and chlorine.

Anthropogenic substances: Dusts and aerosols (domestic, road and industrial dust including soot particles and polycyclic aromatic hydrocarbons), occupational substances, household substances and costume jewellery components (silver and nickel compounds).

Body care products: Lipids, active agents, pigments (from lipstick, make-up, camouflage, powders and mineral sunscreen), colourants (mascara, eyeliner pencils) and excipients of all kinds.

Microorganisms and their waste and metabolic products including enzymes and fatty acids.

The oldest skin cleansing agents are water and vegetable oils. Hydrophilic substances can be dissolved and removed with water, lipophilic substances with oils. The simple combination of water and oil would be ideal from a physiological point of view for skin cleansing, especially with regard to problem skins. But unfortunately, water and oil cannot be mixed and products with the note "Shake before use!" are not for sale. There is a need for uncomplicated cleansing products that can remove water- and oil-soluble as well as insoluble dirt and loose skin flakes from the skin surface. For this purpose, surface-active additives are used that emulsify oils and fatty substances in water and have sufficient "dirt-carrying capacity".²⁾

The best-known substances of this type are soaps which consist of the sodium and potassium salts of long-chain fatty acids (►Chap.7.2). They are still in use in the form of bar soap. Soaps of traditional composition react with the calcium and magnesium salts dissolved in the water (water hardness) to form insoluble "lime soaps" that leave unsightly residues in the washbasin. Many products – especially the liquid soaps and syndet bars – therefore contain synthetic surfactants instead, which are compatible with hard water and whose pH is adjusted from neutral to slightly acidic (pH 7 to pH 4.5). Swelling of the skin is less than

with conventional soaps, which can reach pH values of 8 to 10.

Liquid soaps contain similar ingredients to syndet bars. Due to the water content, they have a lower proportion of washing active substances (WAS).

The product names vary depending on the intended use. Cleansing- and shower gels (shower baths) are usually more or less transparent preparations that are thickened by consistency enhancers. Shower creams contain an additional oil phase which is said to have a moisturising effect. Similar differences are found in shampoos, which are designed for cleaning the hair, but in practice are often used on the whole body.

9.1.1 Detergent components

Skin cleansing products may contain a number of other formulation components in addition to washing-active soaps and surfactants (►Chap. 7.2):

Superfating agents such as vegetable oils, liquid waxes (e.g. jojoba oil) or long-chain acids (stearic acid, palmitic acid) serve to refatten the skin and are intended to prevent greater dehydration. They are often found in baby- and cream soaps.

Refatting agents often consist of surface-active polyethylene glycol derivatives (PEG (►Chap. 7.2.2)), which physically only differ from the related emulsifiers by their lower **CMC value**. They are not suitable for atopics.

For this group of people, even more **foaming products** are less suitable if they contain short-chain washing-active substances such as lauryl sulphates. Foam formation can be increased by adding **foam stabilisers**, which is particularly desirable for baths. If, as in the case of shower preparations, application to the hair is anticipated, **conditioning agents** may be included to prevent the hair from becoming electrically charged after drying. Conditioning agents are similar in structure to refatting agents; they are also frequently quaternary ammonium salts (“quats”), recognisable in the INCI by the syllable “-onium”.

Ubiquitous ingredients are **antioxidants** (►Chap. 7.5) to protect oxygen-sensitive ingredients. If re-fattening or fatty substances remain on the skin during skin cleansing, e.g. in a cleansing milk, tocopherol and ascorbic acid are to be preferred over phenolic substances such as BHT.

The more water-containing the products are, the more frequently **preservatives** (►Chap. 7.1) are found. Due to their allergenic potential, they should not be left on the skin, as cleansing weakens the skin's barrier function and facilitates the penetration of preservatives. Alternatively, there are now many preservative-free products whose water activity (available free water) is low and does not allow microorganisms to multiply.

With deodorant soaps, bactericides remain on the skin to stop body odours. The situation is similar with **fragrances**. Higher concentrations are used to mask body odours and achieve a special feeling of well-being, while soaps and cleansers designed for sensitive skin tend to contain low amounts or no fragrances at all.

Frequent companions of antioxidants are **complexing agents** whose task is to bind traces of heavy metals and the hardness components of the water. A typical complexing agent is EDTA (ethylenediaminetetraacetic acid) in the form of sodium salts.

Consistency agents are used to adjust the viscosity – an important usage property for liquid soaps. In the case of polyethylene glycol derivatives, common salt (sodium chloride) takes over this task.

A **low pH** is adjusted with acids such as citric acid; if a citric acid buffer is used, the pH remains stable even during longer storage.

Dyes are contained in many cleaning products. They balance out colour nuances of the raw materials and make the products more appealing. Special effects such as pearlescence are achieved through **pigments**.

Abrasives are used to remove firmly adhering impurities or to achieve additional exfoliation (►Chap. 9.3). These consist, for example, of jojoba beads (wax particles) or fruit seed flours. Plastic beads are now rarely used because of the microplastic problem. While abrasives with surfactants are used for washing pastes, the combination of abrasives with a cream base that simultaneously cares for the skin is recommended for distinct peeling preparations.

Blemished or acne skin is best treated with cleansers that do not leave any residue – especially at the sebaceous gland exits. Keratolytic and anti-inflammatory agents are beneficial.

9.1.2 Cleansers for sensitive skin

Regardless of the technological structure, the skin comes into contact with a high surfactant concentration in liquid soaps and shower preparations, unlike in bath additives (bubble baths). Particularly high demands are therefore placed on the compatibility of the surfactants used. Short-chain surfactants such as sodium lauryl sulphate have an irritating effect on prolonged contact because they react with proteins. Long-chain surfactants, on the other hand, are much better tolerated. The inherent odour of surfactants is masked with fragrances.

Micellar water is a rather light cleansing lotion that consists of water and surfactants.

For dry skin, barrier disorders and atopic dermatitis, the use of **cleansing milk** applied without water is recommended. This reduces the loss of epidermal lipids. Emulsifiers and surfactants are not very suitable for atopic skin. For these cases, there are lamellar cleansing milk preparations. In these, natural components such as

phosphatidylcholine (▶ Chap. 5.1.4) take over the connecting function between the water and oil phases. The preparations leave triglycerides on the skin and thus have a skin-caring effect at the same time (“Two in One” product). Humectants such as glycerol, glycols, sorbitol (▶ Chap. 6.8) not only increase skin hydration, but also have a biostatic effect that makes sensitising preservatives superfluous. The lipid content enables the gentle removal of make-up and camouflage. The cleansing milk applied in excess is removed again after application together with the dispersed dirt particles. Optionally it is rinsed with pure water afterwards.

High lipid contents also characterise **oil baths** (▶ Chap. 9.2), which are used for sensitive and dry skin. However, the composition of these baths is important: Emulsifiers increase the cleansing effect but reduce the skin care effect. If emulsifiers are replaced by phosphatidylcholine or/and other substances with an affinity to keratin, the greasing potential can be fundamentally improved.

Special products for facial cleansing are also surfactant-free. These are, for example, **cleansing masks** based on healing clay or kaolin, which are mainly used to treat oily skin, or enzyme peeling masks (▶ Chap. 9.3), which contain enzyme-containing plant extracts (e.g. from pineapple and papaya) in addition to the clay base. Enzyme peelings are particularly suitable for acne-prone skin and are much gentler than fruit acid peelings, which often cause more severe irritation of the skin.

Excessive cleansing dries out the skin and facilitates the penetration of pathogenic germs and allergenic substances from the daily environment. Skin cleansing must be particularly gentle in sensitive areas such as the anal region, as it is precisely there that a moist microclimate promotes bacterial infections and associated skin barrier disorders.

9.2 Baths

Bathing and bathing preparations have a long tradition and have lost none of their popularity today. In the age of the shower, the variety and consumption of different bath products continues to increase.³⁾

Water has an attractive effect on people. While for children the focus is on fun and exercise, for adults skin cleansing, health aspects and the relaxing effect play a greater role.

Besides cleaning, pure water has a variety of effects on the organism and the skin. Above all, temperature stimuli and the buoyancy in water are used, for example, for the therapy of circulatory disorders, rheumatic complaints and problems of the musculoskeletal system. Physiotherapies in water are highly effective. A

warm shower stimulates blood circulation, while a cold shower tightens the skin, activates the circulation and causes the adrenal glands to release more adrenal hormones. However, water also has side effects:

- Water has a draining effect on the skin – an effect that is particularly pronounced in those with a tendency to dry skin and in atopics due to the surfactants contained in skin cleansing products.
- Emulsifiers in skin care creams, which are stored unchanged in the horny layer and reactivated by water, contribute significantly to the wash-out effect (▶ Chap. 7.2.2).
- Calcareous water triggers further stress in a disturbed skin barrier, as it precipitates the skin's own acids, e.g. palmitic acid, as calcium salts and leads to further destruction of the barrier.

Apart from cleansing the skin, the aims of bath preparations are therapeutic measures, wellness (feeling good) and skin care. Depending on the area of application (tub, partial baths, shower), the preparations fulfil different requirements.

9.2.1 Foam baths

Like liquid soaps, bubble bath concentrates contain high levels of surfactants, but these do not reach the skin in concentrated form because they are diluted in water beforehand. The proportion of foam-producing components is higher in the products than in liquid soaps. Foam baths are particularly popular with children. But even adults still regard a lot of foam as synonymous with a good cleansing effect. However, it is precisely the foam-forming substances that usually cause the skin to swell more and deprive it of natural protective substances. Although from a dermatological point of view it seems desirable to do without foam, it is difficult to place such products for healthy consumers. Foam baths are only recommended for insensitive or oily skin. For small children, whose skin is still not very resistant, emphasis should be placed on particularly mild washing-active substances.

9.2.2 Salt baths

Baths for daily skin cleansing have taken a back seat in favour of time-saving showers, but they are still important. Salt baths play a dominant role in dermatology, serving to remove crusts and scales from skin lesions. Salts support healing and influence the cell proliferation of the skin. Salts of the Dead Sea, table salt baths and brine baths, for example, reduce the excessive formation of epidermal lipids in psoriasis and are often combined with therapeutic UV irradiation (phototherapy). Compared to pure water, salt baths reduce skin swelling and allow longer dwell times in the tub. However, the application concentrations must be correspondingly high.

Commercially available bath salts for daily use on healthy skin do not reach the concentrations of therapeutic salt baths by far. Their effect is limited to a psychological wellness effect. Perfumed tablets, granules or crystals based on common salt, sodium sulphate or sodium carbonates show a neutral or slightly alkaline pH after dissolving in water. The popular effervescent tablets contain sodium hydrogen carbonate (natron), citric or tartaric acid, fragrances and colourings in crystalline dry form. When the tablets come into contact with water, the acid releases carbon dioxide from natron.

Other bath salts create a more alkaline pH in the bath water through particularly high sodium carbonate concentrations. The theory behind this is to achieve a deacidification effect on the organism by binding the skin's own acids. Chemically speaking, the removal of acids and other barrier substances stimulates the skin to produce more barrier substances, i.e. to increase its regenerative activity. While this effect can be beneficial for people with normal to oily skin, it is rather disadvantageous for people with dry and atopic skin, as the existing, comparatively small amount of barrier substances is reduced even further.

9.2.3 Therapeutic baths

In addition to cold and warm water treatments such as **Kneipp's baths** (e.g. treading water), underwater massage and gymnastics as well as salt baths, therapeutic baths, e.g. sitz baths and foot baths, are recommended for various medical indications. They mainly contain astringent, anti-inflammatory, antipruritic, keratolytic, antifungal, antiseptic, disinfectant, soothing or stimulating additives. Monosubstances as well as extracts and essential oils are used, with excipients facilitating their distribution in water. The aim is to treat the skin or the entire organism. Volatile substances such as essential oils complement the effect through inhalation and warmth, which is particularly desirable for colds and infections.

Therapeutic baths belong to balneotherapy in the narrower sense. This refers to waters from medicinal and thermal springs, often in combination with **thermal baths** (► Chap. 6.1.2). Since the substances that are said to have a healing effect are usually present in low concentrations, medicinal waters are used in cures lasting several weeks. With the exception of waters containing humic acid, the dissolved components are mineral salts or dissolved gases. Typical examples are brines, which at higher concentrations can be counted as salt baths. They contain trace elements, carbonic acid, sulphur, radon or iodine. Depending on the composition and combination with physiotherapies, the baths have a healing effect, mostly for chronic or degenerative diseases. They are often combined with inhalations. Example: fir trees that release essential oils on contact with the brine.

9.2.4 Skin care baths

Baths with donkey milk, mare's milk and oils are the precursors of skin-caring oil baths in which natural oils (triglycerides), waxes, paraffin oils or silicones are incorporated. For atopics, for example, soybean oil and evening primrose oil are recommended. There are many variants of oil baths, depending on their composition they are also used as shower oils. A distinction is made between three types:

- **Spreading oil baths** without or with a low content of emulsifiers. Spreading is understood to mean a rapid and even distribution on the water surface, usually facilitated by the addition of synthetic esters such as isopropyl myristate (IPM).
- **Milky dispersing oil bath concentrates** with higher emulsifier content
- **Clearly soluble bath oil concentrates** with very high emulsifier content. They are also offered as "oil foam baths" or "oil shampoos".

Emulsifiers in oil bath concentrates disperse fatty substances or oils in water and prevent their unwanted settling at the edge of the tub. Emulsifiers dissolve the body's own protective substances from the skin. This degreasing effect is not compensated by the transport of oil bath components into the skin. In this respect, most oil baths differ fundamentally from natural milk. There, well-tolerated, physiological substances such as phosphatidylcholine take over the function of emulsifiers. They adhere to the skin's keratin and deposit the milk droplets on the skin. This principle is the model for an oil bath that is composed of pure phosphatidylcholine and skin oils. Both substances are absorbed by the skin and do not settle on the edge of the tub. Unlike conventional preparations, **oil baths with phosphatidylcholine** do not form the usual oil-in-water emulsions (O/W), but a dispersion of large liposomes and nanoparticle-like droplets (semisomes) when they are swirled in water.

9.2.5 Aromatherapy

For aromatherapy and wellness, bath oils are enriched with essential oils and fragrances. Here, nourishing oils only have a carrier function. The preparations are used specifically for the body and circulation. Depending on the type of essential oil or corresponding mixtures, relaxing, invigorating or antispasmodic effects are achieved. Essential oils must be well distributed in the water for these purposes, as they irritate the skin in concentrated form. Finished preparations therefore practically always contain emulsifier components – with the exception of the semisomes mentioned above. The same applies to fragrant sauna infusions.

Depending on pH, surfactant or emulsifier content, bath, shower and cleansing preparations degrease the

skin. The consequences are an increase in transepidermal water loss (TEWL) and correspondingly dry skin. Therefore, it is recommended to use a well-distributing, fat-containing care cream or body lotion containing moisturising substances after the bath.

9.3 Peeling

In great-grandmother's time, it was customary to support body cleansing with a coarse brush once a week. This not only freed the skin from stubborn impurities, but also from loose skin flakes. At the same time, microcirculation and skin regeneration were stimulated in the vessels near the surface. The latter is the focus of professional peeling, which is not so far removed from the root brush if it is carried out with mechanical friction bodies. In the last few decades, mechanical peelings have been joined by chemical, enzymatic and apparatus, even laser peelings.⁴⁾⁵⁾

9.3.1 Mechanical peelings

Mechanical peelings stimulate the microcirculation of the skin. They strengthen the natural desquamation and can be easily dosed. Compared to chemical peelings, they are free of side effects and can be adapted to any skin – including problem skin – with regard to the friction bodies and the medium in which they are located.

Water-insoluble abrasives: Fine silica sand, pumice and wood flour and ground olive stones are among the oldest water-insoluble abrasives. They are still offered in the form of abrasive washing pastes that are rinsed off with water after use.

For cosmetic peelings, the practice first cleanses and then peels in a second step. In this case, the scrubs are applied with nourishing oils, creams or gels. Grating bodies are ground seeds and peels of fruits (olive, apricot, peach, walnut) and coffee grounds. Plastic particles made of polyethylene (PE), polypropylene (PP) and polyurethane (PUR) were common until the microplastics issue began. Besides healing earths (clay, loam), wax beads are also in use, e.g. jojoba beads. Due to their rounded structure, they are much milder than sharp-edged mineral or wood-like particles.

Water-soluble abrasives: Substances such as common salt, sea salt, Dead Sea salt, ground rock candy or sugar crystals are popular because they can be used as a wet paste or in combination with a vegetable oil or oleogel. They have the advantage that they dissolve when rinsed off. Excess oil or gel is removed with a cleanser or shower gel if necessary. The latter should not contain any refatting substances so as not to interfere with subsequent treatments. In the case of water-soluble abrasive bodies, especially salts ("salt peeling"), individual sensitivity should be taken into account, as small skin

lesions may cause a temporary, harmless burning sensation.

Mechanical peelings are not suitable if the skin is prone to telangiectasia, rosacea or similar problems affecting superficial blood vessels and connective tissue. For acne skin, chemical or enzymatic peelings are used.

The removal of parts of the horny layer temporarily increases the transepidermal water loss (TEWL), i.e. a protective cream with moisturising substances must be applied after the peeling. Peelings should not be carried out too often, as the skin gets used to them and reacts with increased keratinisation.

9.3.2 Chemical peeling

Chemical peelings enhance the microcirculation through a chemical stimulus in addition to the actual peeling. The intensity of the chemical peel varies depending on the type of treatment. The treatments require a lot of experience and are partly reserved for dermatological practices.

Vitamin A acid may only be applied in medical practices. The skin is specifically irritated which leads to a stimulation of the collagen synthesis and in general to a stimulation of the regeneration activity of the skin in the course of which also the uppermost skin layers are shed. The vitamin A acid effect can be observed to some extent in the application of cosmetic preparations with vitamin A derivatives when high dosages are used. Thus, retinyl acetate is enzymatically split into acetic acid and vitamin A, which is converted into vitamin A acid in the skin. When vitamin A nanoparticles are used, this "side effect" shows up earlier compared to conventional preparations because the availability of the active agent is very high.

Alpha hydroxy acids: The fruit acids (AHA) were the successors of vitamin A acid after its ban in cosmetics. While with vitamin A acid the acid function as such is not decisive, with the AHA acids it is precisely this that matters. Strong acids are known to cause irritation and even burns on the skin. Of course, burns must not occur during peeling; therefore, fruit acids such as glycolic and lactic acid are more controlled and safer to use in this respect than, for example, diluted hydrochloric acid, which would have the same effect. Experience has shown, however, that fruit acids must also be handled with care in order to exclude skin damage. The irritation, in which proteins are also denatured on the surface, causes intensive new cell formation. By substituting the existing horny layer, the skin appears rosier and fresher and the smallest wrinkles disappear for a certain time. However, the frequent use of fruit acid peelings stresses the skin and makes it sensitive and parchment-like in the long run.

Trichloroacetic acid (TCA) used in dermatology is expected to last from one to several years, depending on

the intensity of the peeling. If the procedure is not carried out properly, permanent pigment disorders and scarring will occur. A point of view that should generally be taken into account with all peelings is the high photosensitivity of the skin after application. If the skin is not protected with a high sun protection factor or if the sun is avoided completely, light damage and accelerated skin aging are to be expected. Unlike mechanical and enzymatic peels, the skin is in a visually unappealing state for days after an intensive chemical peel due to the severe reddening and peeling of the skin. Peelings with TCA are also painful and are performed under anaesthesia.

Phenolic compounds: In addition to the toxic phenol, which is no longer in use, these include the keratolytically active salicylic acid and 2-hydroxy-5-octanoyl salicylic acid. The latter is a beta-hydroxy acid. As with AHA acids, a superficial to peeling exfoliation takes place. Phenolic substances consistently have antimicrobial properties, a point of importance in infected skin such as acne. However, after exfoliation, the skin is vulnerable to external germs due to the weakened barrier. It is therefore important to ensure particularly good skin protection after all peeling measures.

Mixtures are sometimes used, e.g. of resorcinol (1,3-dihydroxybenzene), which belongs to the phenolic compounds, with lactic acid and salicylic acid. This mixture has become known as the Jessner. Even combinations of vitamin A acid together with fruit acids and salicylic acid or vitamin A acid with trichloroacetic acid are used. The results are sometimes not to the liking of the patient. There is a relatively high rate of chemical peelings where the skin condition does not improve for various reasons, sometimes even worsens.

Herbal peels have a similar effect to chemical peels. The extracts used contain appropriately acting chemical compounds, which in this case are of natural origin.

9.3.3 Enzyme peeling

Proteins hold the cell clusters of the horny layer together. The dead cells can be loosened by enzymatic cleavage and removed superficially after an exposure time of 10-20 min. For this purpose, masks are used that contain spray-dried plant juices containing enzymes and are mixed with water.

The enzymes are proteases (protein-cleaving enzymes ▶Chap. 6.15) such as papain from the sap of the melon tree and bromelain from the juice and stems of the pineapple. Enzymatic peelings are gentle and uniform; the effect is limited to the skin surface. Therefore, they can easily be applied once a month. The microcirculation is not stimulated because there is no mechanical or deep-acting chemical stimulant.

9.3.4 Laser and microdermabrasion

As an alternative to chemical peeling, dermatological practices use special laser devices (erbium, CO₂ laser) for peeling. The thermal energy generated in the process specifically removes the upper layers of the skin. Side effects such as skin dryness, infections and scarring are to be expected. Healing takes about a week, redness remains for up to several months. Applied under (local) anaesthesia, laser peeling is mainly used to smooth wrinkles and to soften and remove skin abnormalities such as acne scars, age spots, hyperpigmentation and cornification disorders. For more on laser procedures see ▶Chap. 11.1.

A device-based variant of mechanical peeling is microdermabrasion. Mineral microcrystals such as aluminium oxide and quartz are blown through a nozzle onto the skin ("miniature sandblaster") and immediately sucked back in under vacuum together with the removed skin cells. Water blasting ("high-pressure cleaner principle") is now also common. Areas of application are wrinkles, scars including stretch marks, light damage and keratinisation, and in general to increase skin regeneration and microcirculation. In most cases, treatments are performed several times in a row at monthly intervals. The advantage of this procedure is the good control and the immediately visible result. Simple mechanical devices are offered for manual microdermabrasion.

9.3.5 Practical advice

All superficial mechanical peels (including microdermabrasion and enzyme peels) can be incorporated into treatment procedures. Before the peeling, the skin is cleansed. The peel is followed by toning and the application of a mask. Sometimes the microdermabrasion is followed by ultrasound and active agents.

As the skin is particularly sensitive to light after peeling, liposomal ascorbyl phosphate (vitamin C ester) and tyrosinase inhibitors can be used in addition to the subsequent sun protection to safely prevent melanin formation. This is particularly important if hyperpigmentation or age spots were previously treated (▶Chap. 15.7).

All peeling measures should be preceded by a thorough analysis of the skin to ensure that it is actually able to regenerate as desired. After chemotherapy, illness or drug therapy, this cannot be taken for granted. Therefore, it may make sense to precede the planned peeling with several weeks of restorative skin care. Otherwise, one must expect that pre-damaged skin will be further stressed by peelings – especially if barrier disorders are present. In this case, the skin condition will initially deteriorate. With microdermabrasion, the treatment intervals must be adjusted to the regeneration potential of the skin.

After peeling, the protection of the skin is particularly important. Home care must therefore protect but not hinder regeneration – a tightrope walk that requires sound advice in each individual case. After deeper chemical peels and laser peels, medically prescribed measures are necessary to safely prevent infections.

9.3.6 Peeling methods at a glance

An orienting overview of the application and risks is shown in the following table (▣ Tab. 9.1).

▣ **Tab. 9.1** Peeling methods at a glance (selection)

Method	Mechanical peeling	Chemical peeling	Enzyme peeling	Laser peeling	Microdermabrasion
Peeling depth	Individual barrier layers	(a) Individual barrier layers, (b) entire horny layer, (c) deeper layers	Individual barrier layers	(a) Entire stratum corneum, (b) deeper layers	(a) Individual barrier layers, (b) entire horny layer
Treatments	Atrophic skin, keratoses, scars, hyperpigmentation, impure skin	Atrophic skin, keratoses, scars, hyperpigmentation, age spots, skin tightening (lifting), wrinkles, light damage, acne skin	Atrophic skin, impure skin, hyperpigmentation, acne skin	Atrophic skin, keratoses, scars, hyperpigmentation, age spots, wrinkles	Atrophic skin, keratoses, scars, hyperpigmentation, age spots, wrinkles, light damage, cornifications
Contraindications	Teleangiectasia, rosacea, inflammatory acne, barrier disorders, sensitive, allergy-prone skin, viral and bacterial infections, naevi	Barrier disorders, sensitive, allergy-prone skin, medical indication	Barrier disorders, sensitive, allergy-prone skin, viral and bacterial infections	Medical indication	Teleangiectasia, rosacea, barrier disorders, sensitive, allergy-prone skin, viral and bacterial infections, naevi
Healing time	Not applicable	Approx. 1 week (b, c)	Not applicable	Approx. 1 week (a, b)	Approx. 1 week (b)
Side effects	Dry skin, tendency to cornification	Dry skin, tendency to cornification (a), skin redness such as sunburn, blisters and crusting (b, c)	Dry skin, tendency to cornification	Redness up to several months	Dry skin (a), tendency to cornification, skin redness, pinpoint haemorrhages (b)
Risks	None	Chemical burns, infections, scarring, pigmentation disorders, damage to deeper skin layers	None	Infections, scarring, pigmentation disorders, damage to deeper skin layers	Infections (b)
Treatment intervals	Every 2–4 weeks	4 weeks (a), max. 1 time per year (b, c)	2–4 weeks	Medical indication	4 weeks

9.4 Toning the skin

Toning the skin after cleansing and before applying a mask is a standard cosmetic procedure. Toning has different objectives. The main focus is on preparing the mask and enhancing the penetration of the active agents contained in the mask. Accordingly, a toning lotion contains penetration enhancers, for example in the form of amidic substances such as D-panthenol or liposomal dispersions with phosphatidylcholine.⁶⁾

In addition, tonics may already contain active agents that support the subsequent mask in its objective, e.g.:

- Flavones and their glucosides stabilise and tone the superficial, capillary blood vessels and connective tissue. This is already associated with a noticeable and visible tightening of the skin around the eyes and décolleté.
- Horsetail extract containing silicic acid has an astringent effect.
- Liposome dispersions containing azelaic acid are effective against anaerobic germs in acne and rosacea.
- Liposomal N-acetyl-glucosamine lotions as part of anti-aging treatments (▶Chap. 5.1.5).
- Epigallocatechin-3-gallate (EGCG) in liposomes stimulates the formation of filaggrins and inhibits collagenases.
- Witch hazel extracts have an anti-inflammatory and mild astringent effect.

In addition, many active agent concentrates (serums) can be used for protection, regeneration and complexion care.⁷⁾

Tonics are applied to cleansed skin with a sponge in a circular motion. If they contain alcohol, a maximum concentration of 12% should be observed to avoid irritation.

9.5 Masks and packs

Masks and packs⁸⁾⁹⁾ must be individually adaptable to the respective skin condition and seasonally. Variety is another consideration, if necessary. These boundary conditions require a high degree of flexibility from the practitioner and the products used. Depending on the skin condition, different types of masks are useful. In general, the mask treatment according to the extended corneotherapy (▶Chap. 1.1) consists of the steps:

- Make the skin receptive,
- introduce active agents and
- close the skin.

With this procedure, the active agents penetrate the skin optimally and can continue to unfold their effect long after the treatment.

Different components are often mixed in the mask treatment. It should be noted that the European Cosmetic Regulation only permits bases (base creams) and active agent concentrates that are stand-alone preparations that have been tested for their tolerability. Adding of chemicals is not permitted. Mixing takes place in the course of the treatment in a clean container or directly on the skin. Alternatively, active agent concentrates and base creams are applied one after the other. This procedure allows higher local concentrations of active agents.

Receptive skin

An important prerequisite for an effective mask is to put the skin in a receptive state. The skin is “opened”. For this purpose, moist heat, the application of lotions containing D-panthenol (“tonics”) or liposome dispersions have proven to be good. D-panthenol has a welcome side effect: it has a calming and regenerative effect, especially on stressed and reddened skin. This effect can be observed, for example, when the skin has been exposed to strong sunlight. The “opening” effect of liposomes is attributed to the fusion of their membranes with the barrier layers of the skin (▶Chap. 5.1.2). Through the integration of their membrane components, especially native phosphatidylcholine, the barrier layers become more fluid and thus more permeable.

Introduce active agents

It is recommended to work specifically with a few active agents in a mask treatment. These can be combined with liposomes. Of course, liposomally encapsulated active agents can be used from the outset. The operations: “opening the skin” and “introducing active agents” are then carried out in one. Liposomes facilitate the transport of water-soluble active agents, nanoparticles the transport of fat-soluble active agents.

Not everyone can tolerate plant-based active agent concentrates (extracts). Example: While witch hazel extract is beneficial for most people due to its astringent effect on chapped and reddened skin, this extract may not be tolerated in the case of a nut allergy. Such sensitivities should be discussed in advance with the person to be treated.

The selected mask mixture (active agents with or without a base) is left to act on the skin for approx. 20-30 min. Afterwards, remove the excess and pat the skin dry with a soft cloth.

Close the skin

After the mask and the associated introduction of the active agents, the transepidermal water loss (TEWL) may still be increased. In this case, DMS cream bases (▶Chap. 4.1.1) have proven effective for closing the skin. They restore the natural protection of the skin. Previously applied liposome components and active

agents are “pushed” into deeper skin layers and prolong the effect of the masks. Creams containing mineral oil are less suitable for this purpose, as their occlusivity lasts beyond the mask and then tends to slow down the desired regeneration of the skin. However, it can be useful to apply a camouflage after the mask to cover skin anomalies. Their mineral oil content cannot yet be completely avoided technically. If possible, the camouflage should only be applied partially and for the period of time in which it is really needed.

Mask types

Fleece masks are available on the market, for example, on the basis of a collagen or algae matrix. The fleece matrix itself is either insoluble or, together with water, turns into a gel phase from which active agents can escape. The fleece can be applied to a cream base, for example. After moistening, an increased occlusivity is created, which allows the active agents to penetrate the skin more quickly. At the end of the treatment, the fleece is simply removed.

Prefabricated cellulose fleeces are available as dry pill masks. They are soaked with the active agent solutions and applied, whereby the active agents can be added from time to time depending on the duration of the mask. Advantage: Active agent concentrates and oils are fixed to the skin in this way and cannot run.

Nano-cellulose masks are usually removed from sterile packaging already moistened. They can be combined with aqueous solutions of active agents. Since they bind water well, even over a longer period of time, there is no need for subsequent dosing.

Cucumber, curd and the like: The application of cucumber slices, aloe, fruits, curd and whey packs, cleansing bran masks etc. are the most traditional and oldest mask procedures, but they are rarely used anymore and are often limited to home care. This is a pity, as practically all active agents processed in ready-made creams and masks, such as fruit acids, vitamins up to enzymes, are freshly applied to the skin without preservatives or other additives. The natural compositions, individual dosages and the variety of possibilities are a great advantage.

Cream masks are applied like skin care creams, but in excess. Towards the end of the 20-30 minute application time, a light massage can be performed before the excess of the mask is carefully removed with a dry cloth. Cream masks are less spectacular, but all the more versatile because they can easily be combined with active agent concentrates or ampoules. The active agent concentrates are either applied over a large area or partially before the actual mask or together with the mask base cream. The mask should always be well moistened on the skin at the beginning and only dry slightly towards

the end. Due to the cooling effect of the evaporating water, the mask has a refreshing and soothing effect.

Healing earth masks are usually based on minerals with a high water absorption capacity, such as clay and loam powder. The minerals are inexpensive and have a long tradition in folk medicine. Healing clays have a cleansing effect by absorbing substances from the skin surface and, on the other hand, releasing minerals into the skin in low doses. Ion-exchanging properties have also been described. Healing clays are also often combined with physiotherapies such as Felke therapy.¹⁰⁾ They bring a pleasant feeling of freshness to the skin. Healing earth masks are removed with water without cleansing additives. Just like the fleece masks, healing clay masks can also be combined with active agent concentrates. This method shows good results on problem skin such as impure, oily skin, mild forms of acne and skin prone to psoriasis. In the case of neurodermitic barrier disorders, additives are usually dispensed with and treatment is continued after the healing earth treatment with an oily, lamellar and irritant-free base cream, essential fatty acids (linoleic acid, gamma-linolenic acid) and a moderate urea additive.

Kaolin masks are applied in a similar way to healing clay masks. They are particularly suitable for modular mask systems, as the prefabricated cream-like basic formulations only need to be mixed with active agent concentrates before use. Moistening is not necessary. They can also be used in home care.

Modelling masks: This refers to powders with a mineral composition that are applied (“modelled”) to the skin after mixing with water and harden after a short time. Since the skin is previously treated with creams containing active agents, this procedure temporarily creates a strong occlusive effect that accelerates the penetration of the active agents contained in the creams. In addition, the heat generated during the curing process (“thermo mask”) increases the blood circulation and thus also the active agent effects. Similar to fleece masks, the modelling masks remain on the skin for about 20-30 minutes and are then simply removed. In order to facilitate the removal, it is important to apply the active agent creams without gaps and in sufficient quantities and, if necessary, to apply a light gauze before the modelling. The modelling compound, which is usually based on calcium sulphate, must not have direct contact with the skin.

Packs: This is done in a similar way to masks. Since the body parts to be treated are “packed” in a fleece after application, the body heat contributes to an increased penetration of active agents. If higher dosages of liposomes are used, a lamellar base should be applied after the pack has been removed, depending on the skin type. This may not be necessary for skin that is naturally rich in lipids. Cream and active agent mixtures for packs can

possibly be stretched by adding warm water. Lime-containing water should be avoided, however, as it can damage the barrier layers, especially on sensitive skin and a previous peeling.

Active agents for masks

For example, active agents that are described in detail elsewhere are suitable for masks:

- **Monosubstances** in aqueous solution such as allantoin, amino acids, azelaic acid, caffeine, B vitamins, D-panthenol, epigallocatechin-3-gallate (EGCG), urea, hyaluronic acid, N-acetyl-D-glucosamine, tranexamic acid, vitamin C, zinc salts.
- **Aqueous extracts** such as algae extract, aloe vera extract, echinacea extract, green tea extract, witch hazel extract, kigelia extract, butcher's broom extract, paracress extract, grape seed extract.
- **Lipophilic active agents** such as vitamin A, vitamin E, coenzyme Q₁₀, frankincense, flavones, isoflavones.
- **Fatty oils** such as apricot kernel oil, avocado oil, rosehip kernel oil, jojoba oil, kiwi seed oil, linseed oil, macadamia nut oil, almond oil, evening primrose oil, grape seed oil, wheat germ oil.

Liposomes are suitable for formulations with aqueous monosubstances and aqueous extracts. Lipophilic active agents and fats can be packaged in nanodispersions.

Modular systems

As already described under kaolin masks, modular systems are well suited for masks. While kaolin masks have a watery-mineral structure, the basis for modular cream masks and packs is a (ideally lamellar) base cream. Another advantage: Modular systems with few base creams and a manageable number of active agent concentrates can also be used for a subsequent massage.

A **soothing cream mask** for sensitive combination skin could be composed of the following ingredients: D-panthenol concentrate, echinacea extract and a base cream for normal, sensitive skin.

Revitalising cream masks are suitable for dry and horny aged skin. Green tea extract, a liposome concentrate with moisturising factors (NMF) and a base cream for low-fat skin are used.

An important criterion for masks and packs is freedom from preservatives and perfumes so that they are not smuggled in together with active agent concentrates.

9.6 Massages

Movement means life. For the body, this applies not only in its entirety, but also to the microcosm of the

connective tissue and the individual cells. Through massage – as in sport – cells are moved and activated, the metabolism is increased. The microcirculation of the blood vessels and the transport of oxygen and nutrients run at full speed. These effects can be so strong that they even deprive you of sleep – for example, if the massage of the extremities was too intensive after a long flight.¹¹⁾

The force of massage is applied to the skin in very different ways. The hands can be used to stroke, rub, knead, tap or vibrate. Intensifying aids are brushes, hot stones), herbal stamps or sometimes even direct body contact. Hot stones are particularly pleasant and, just like manual walking, help to relieve tension – the wellness aspect of the massage comes into its own. Herbal stamps are a science in themselves and are used in both the cosmetic and medical fields.

Product requirements

The gentle gliding on the skin is made possible during massages by aqueous media based on hydrogels (►Chap. 4.1.2) and emulsions. Oils and oleogels (lipogels ►Chap. 4.1.3) are the water-free variants. The following generally applies: If gloves are worn for hygienic reasons, they must be compatible with the massage medium. Softeners or latex components must not transfer to the skin. Otherwise, sensitive persons may experience unwanted secondary reactions.

Above all, the oils should have a sufficient consistency. This means that they must not be too liquid and must not run too quickly. Under the hands, they must form a consistent film that transfers the external pressure and stroking impulses to the skin in the best possible way and yet gently. This can be achieved with adhesive additives such as castor oil or 12-hydroxystearic acid esters. Phytosterol-rich oils and waxes such as avocado oil and shea butter are a good addition.

Oils and oleogels

Almond oil and grape seed oil are often used as base oils. Ultimately, many other vegetable oils are equally suitable.¹²⁾ Attention should be paid to the fatty acid composition of the triglycerides and the natural content of vitamins and phytosterols. Rosehip seed oil, for example, has a well-balanced ratio of linoleic (omega-6 acid) and alpha-linolenic acid (omega-3 acid), both of which ensure a high level of skin care. Sunlight- and oxygen-sensitive, unsaturated oils should, however, be used in the evening if possible – provided they do not contain antioxidants.

Solid to semi-liquid oleogels made from vegetable oils (►Chap. 4.1.3) are well suited for local massage around the eye, on the décolleté or on the feet. By means of penetration-promoting substances such as phosphatidylcholine, good absorption is achieved, which fur-

ther increases the care effect. Oily shine and greasy feeling are significantly reduced.

Of course, paraffin oils, sometimes silicone oils and their oleogels can also be used for massages. However, they do not contribute to skin care, remain on the skin surface and have to be removed after the treatment.

Cleansing is easier if cleansing substances are added to the oils from the outset. Warm, moist compresses or a shower are then sufficient to remove the oils quickly and completely with warm water. In the process, however, the skin also loses its own lipid and barrier components, which must be compensated for after cleansing – ideally with a physiologically composed body lotion.

Hydrogels

Like ultrasound gels, hydrogels (▶ Chap. 4.1.2) contain water and polymeric consistency enhancers such as xanthan gum or sodium carbomer.¹³⁾ The disadvantage is that a certain cooling effect always occurs due to the unavoidable evaporation of the water. When drying, hydrogels become sticky or crumbly if you do not add lukewarm water in time.

On the other hand, hydrogels can easily be enriched with aqueous extracts and water-soluble active agents. Especially polysaccharides like xanthan, hyaluronic acid and algae extracts including alginic acid hydrolysates can be used to maintain the skin hydration or to provide plumping care effects. When it comes to massaging thigh areas (cellulite) or treating them partially with ultrasound, hydrogels with liposomal caffeine or liposome concentrates in combination with green tea extract have proven successful. They mobilise fat deposits and increase microcirculation.

As hydrogels are highly aqueous, preservatives are an issue. Seemingly inexpensive preparations are not recommended if they contain preservatives with sensitising potential. Preservative-free formulations with appreciable amounts of glycerol, glycols or sugar alcohols such as sorbitol can be wiped off with warm moist compresses at the end. Any minor hydrogel residues that may remain are not a nuisance. On the contrary, they serve to moisturise the skin. Subsequently, greasy skin care creams can be applied without any problems.

Massage creams

Massage creams are characterised by high oil content. Since the mechanical forces during the massage cause a high absorption of the creams, pay attention to the INCI. Perfumes are not always tolerated. A small addition of compatible essential oils is in any case the better alternative. There is nothing wrong with emulsifiers such as mono- and diglycerides or lecithin (phospholipid mixture). They correspond to the physiology of the skin. Lamellar creams such as the Derma Membrane Structure (DMS ▶ Chap. 4.1.1) can still be combined

with a fleece pack (▶ Chap. 9.5) after the massage – provided with individual active agents. If the massage is part of a facial treatment, DMS without additional active agents before the facial mask is not suitable due to the high absorption rate. The mixture of DMS with oils and active agent concentrates, on the other hand, allows an effective massage and can also be used as a subsequent resting mask at the same time.

Active agent additives

Massages are not only about choosing the right bases, but also the active agent additives. If you add essential oils, balms and extracts, you can pull out all the stops of aromatherapy. However, since the transition into the body does not take place through the medium of water as it does with baths, one should start cautiously with small dosages. Essential oils work both via skin absorption and via their scent radiation. This applies equally to the soothing and relaxing variants.

Depending on the purpose of the treatment, cooling oils such as menthol or warming substances such as vanillin ether, ginger or chilli are chosen. Horse chestnut, for example, is used to improve microcirculation during foot massages. Arnica is known for its decongestant effect. Essential fatty acids, frankincense, betulin and coneflower extracts are recommended for sun-damaged skin and redness. Chamomile and calendula have a soothing effect on the skin. Vitamins A, B, C and coenzyme Q₁₀ as well as tea preparations increase the metabolism of atrophic skin. For cellulite (▶ Chap. 15.4.3), massage with liposomal caffeine.

If one wants to achieve a light, superficial peeling effect, one can resort to serums with urea and willow bark extract. Urea, amino acids and protein hydrolysates complement the cream massage of dry skin. They strengthen the NMF and are a good protection against atmospheric radicals. A firming effect is achieved, for example, with additions of kigelia extract, horsetail extract or isoflavones. For wrinkles on the face, paracress in low doses is also suitable.

Not all active agents are useful for every skin type. And there are also contraindications for massages. If the skin is inflamed or if there is a risk that germs will spread further and infect other areas of the skin despite disinfection measures, e.g. in the case of acne, massage should be avoided. The same applies to skin lesions suspected of melanoma. Skin damaged by connective tissue (rosacea/couperose) can also be a problem. Active agents should only be tapped in carefully.

For contemporaries spoiled by wellness and partner massage, pretty much everything that tastes and smells good is now also offered as a massage medium. From vegetable oils with vanilla, gingerbread and chocolate aromas to wine, honey and hot chocolate. There is a lot

of talk about detoxification and purification. But it is probably more the fun factor that is in the foreground.

9.7 Final care and home care

After a cosmetic treatment, such as a mask or massage, a final care is usually still necessary in order to reconstitute the skin barrier after the passage of active agents on the one hand, and on the other hand to make remaining active agents – such as essential fatty acids or vitamins, which may be sensitive to light or oxygen – even more available. For this purpose, lamellar creams are very well suited, as they closely resemble the physical structure of the skin barrier.

Follow-up treatment can also be carried out at home at a later time if it seems appropriate. Furthermore, it

should be ensured that the home treatment harmonises with the professionally carried out treatment process in order to achieve and secure sustainable effects in the long term.

With modular systems, both daily home care and special treatments at home can be adapted to the individual situation. For this purpose, either individual ready-to-use preparations in the form of bases and serums are available, which are applied step by step or mixed before use. Cream masks in small dispensers for single or multiple uses are also practical in this regard. Professional premixes in the dermatological practice or cosmetic institute are possible as an individual service from the point of view of the European Cosmetic Regulation.

- 1 Lautenschläger H, Gesichtereinigung – Inhaltsstoffe und Geräte, *medical Beauty Forum* 2018; 1: 14-17.
- 2 Lautenschläger H, Hautreinigung – Die richtige Wahl, *Kosmetische Praxis* 2004; 5: 8-10.
- 3 Lautenschläger H, Therapie und Wellness in der Wanne – Balneogische Präparate, *Pharm. Ztg.* 2003; 148 (3): 22-26.
- 4 Lautenschläger H, Mechanisch, chemisch, enzymatisch – Peelings für alle Fälle, *Beauty Forum* 2009; 7: 56-58.
- 5 Lautenschläger H, Mechanisch, chemisch, enzymatisch – Peelingmethoden im Fokus, *Beauty Forum* 2012; 4: 16-18.
- 6 Lautenschläger H, Konzentriert – Seren und Ampullen, *Kosmetik International* 2004; 5: 72-74.
- 7 Lautenschläger H, Konzentrierte Wirkstoffe – was Seren und Ampullen leisten, *Kosmetik International* 2020; 6: 12-15.
- 8 Lautenschläger H, Muntermacher – Masken und Packungen, *Kosmetik International* 2002; 8: 34-37.
- 9 Lautenschläger H, Masken – Die schnellen Frischmacher, *Kosmetik International* 2002; 3: 32-34.
- 10 Emanuel Felke (1856-1926), *Bad Sobernheim* (Germany).
- 11 Lautenschläger H, Das sanfte Gleiten – Präparate für die Massage, *Kosmetik International* 2011; 2: 36-40.
- 12 Note on partner massage: Massage oils are usually not condom-compatible – especially when essential oils are added.
- 13 Note: The hydrogels are also suitable as lubricants.