

Landing approach – preparing for the final descent

Skin care for pregnant women

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When the stork has announced his arrival, the furnishing of the apartment, the daily routine and the baby equipment need to be organized. Also the skin care should be adapted to the new situation.

Pregnancy is a decisive turning point in a woman's life. Just about everything changes. Hence it is necessary to adapt to the new situation and to new requirements. Skin and skin care are no exception here. From the very beginning of the pregnancy, the placenta releases the hormone human chorionic gonadotropin (hCG) that stimulates the formation of progesterone and estrogen. In this way, the body prepares for the upcoming birth. Also the external skin appearance is affected.

- The skin hydration increases, wrinkles disappear and the breasts become firm.
- The microcirculation in the skin improves, the external skin temperature rises.
- Spider veins become more visible (Couperosis).
- The skin tone is lightly darker due to the increased blood circulation. More melanin is produced. Pigmented spots may appear.
- The sebum glands are more active, they intensely fatten the skin which can lead to skin blemishes.
- The skin elasticity increases.

In the majority of cases, the skin condition will improve. Hence there is no reason to worry about the daily care of the "normal" skin, although it may need to be slightly adapted in individual cases.

Avoiding disorders

Yet, the situation is different regarding the stretching of the skin which, depending on the individual structure of the connective tissue, may lead to the dreaded stretch marks or striae. Striae form when the collagen structure on the belly, hips and breasts is too intensely stretched and subsequently ruptures. This leads to ribbon-like scars. Massages are recommended as a preventive measure in order to preserve the skin elasticity. Adequate vegetable oils for this purpose are wheat germ, grape seed, evening primrose, rose hip seed

and linseed oil that all contain essential fatty acids such as linoleic acid, alpha- and gamma-linolenic acid and stimulate the skin recovery. Watery nanodispersions of these oils also are beneficial for the daily skin care. They penetrate easily and do not leave an oily film on the skin. Mixed with vitamin E, Sodium Ascorbyl Phosphate (a vitamin C derivative) and barrier creams they are an excellent formulation for the treatment of scars.

The skin, prone to barrier and cornification disorders already under normal conditions, becomes even more sensitive when it is stretched. In these cases, attention should be paid to the composition of the skin care products. Preservatives and emulsifiers could be a problem in this context. The hygienic products should contain very gently tensides. It is also suggested to just use lukewarm and soft water without any additives as often as possible.

The clothing should be light and not chafe the skin. After all, the increased activity of sweat glands related to pregnancy should not additionally be stimulated. Gentle cream-based deodorants are beneficial if the skin becomes irritated by perspiration.

Risk of infections

If the skin barrier layer already is stressed, excess hygiene frequently leads to infections since fungi and germs can easily penetrate into the skin. It is recommended to ask the physician for an effective antifungal drug, if a mycosis starts to appear. The treatment needs to be continued until the skin has shed the disordered barrier layers, which will take its time. The formation of a new barrier layer may be intensified with the vitamins A, C and E as well as D-panthenol combined with an emulsifier free cream base.

Itching can be controlled with creams or powders containing urea, allantoin or fatty acid amides. If the itching problems persist, medical consultation is advised which also is suggested if unusual skin reactions appear. The skin prone to erythema, chafing and irritations can

easily be soothed with the already mentioned essential fatty acids and vitamins¹.

Frequently the question arises, if there are substances that need to be avoided during pregnancy.

With the exception of highly polar substances, practically all the small molecules pass through the skin barrier and disseminate in the body when they are not metabolized in the epidermis. Similar to nicotine and alcohol, both critically judged in this context, there also are cosmetic ingredients that should be closely scrutinized as the following examples can show:

Take a good look

- In concentrated form, essential oils permeate the skin particularly well and can be found shortly afterwards in the blood circulation. In some cases, also undesired and highly allergenic products that react with the atmospheric oxygen may form during storage. Examples are ascaridol and 1,2,4-Trihydroxy menthane from tea tree oil and 5-Methoxy psoralene from bergamot oil. Hypericin from St. John's Wort oil may cause macular hyperpigmentations.

There are contradictory statements regarding other essential oils. The oral intake of sage during pregnancy for instance is not recommended as the thujone contained has toxic effects and also supposedly impairs breast feeding. There is only little information on the topical application. Sage oil occurs e.g. in cream deodorants. Perfume oils and aromatic oils are composed of natural essential oils and/or synthetic odorants. For quite some time now, some of the most potent allergens have to be declared on the INCI.

- Caffeine occurs in cosmetic products in the form of a synthetic monosubstance and in the form of tea extracts (green tea). In general, 200 mg of caffeine per day are considered to be harmless for pregnant women when ingested in the form of coffee or tea. A cup of filter coffee contains about 100 mg of caffeine, a cup of tea about 50 mg. Just to give you an idea for comparison: about 2% of caffeine in cosmetic active agent concentrates are considered to be a high dosage. In order to reach the daily dosage of 200 mg, about 10 ml of active agent concentrates would have to be

applied. Losses during absorption are not even calculated here (see also vitamin A).

- Without exception, all preservatives licensed in the German Cosmetic Regulation (KVO) have an allergenic potential. It has not yet been proved though, whether the contact with these substances can result in a sensitization of the unborn baby. In case of doubt, it is recommended avoiding products preserved with phenolic or haloaromatic compounds such as triclosan, chlorphenesin or cresols. Products containing salicylic acid should not be applied on the breast area after birth, since the substance must not be administered to children younger than 3 years. In Denmark, the use of butyl and propyl paraben in products for children younger than 3 years has been banned since 2011².
- Phthalates are not explicitly mentioned in the INCI. The substances also are known as softeners and used in the denaturation of alcohol which subsequently has to be labelled as alcohol denat. Diethyl phthalate (phthalic acid diethylester, or abbreviated DEP) is mainly used in cosmetic products. According to the German alcohol tax law, the minimum concentration in alcohol is 0.5%. In a study conducted in 2008, the urine of 163 young children born between 2000 and 2005 has been tested for phthalates. In this context, mono-ethyl phthalate, mono-methyl phthalate and mono-isobutyl phthalate could be measured in concentrations that correlated with the number of skin care products used. From a toxicological point of view, the recommendation of the German Federal Environmental Agency (Umweltbundesamt, UBA) to avoid DEP needs to be taken seriously³.
- Some of the older UV filters have been controversially discussed because of their endocrinal (hormonal) activity. They can be detected in the human breast milk⁴. In how far the results of in vitro and in vivo tests regarding their hormonal effects (mammals, fish) can be applied to the human organism is not known yet. An interesting fact is that about half of the positive

² 7. Sitzung der BfR-Kommission für kosmetische Mittel, Protokoll der Sitzung vom 19. Mai 2011

³ Lautenschläger H, Echt gallig! - Reinen Alkohol einschenken, Kosmetik International 2009 (12), 28-30

⁴ Schlumpf M et al, Endocrine active UV-Filters: Developmental toxicity and exposure through breast milk, Chimia 62, 345-351 (2008)

¹ Lautenschläger H, Hautrötungen - den Ursachen auf der Spur, Kosmetik International 2005 (8), 34-36)

milk samples originated of women that did not explicitly use sun protection products. Hence, day creams and lipsticks that often are equipped with additional UV filters may have been the source. As a precautionary measure though, the extensive use and constant stress through UV filters as for instance during sun bathing should be reduced to a reasonable and actually necessary protection.

- **Vitamin A** is contained in cosmetic products in the form of Retinol (alcohol), Retinal (aldehyde) and Beta-Carotene (provitamin A). Retinol Acetate, Retinol Propionate and Retinol Palmitate are vitamin A esters and enzymatically hydrolyzed in the skin. Their effects largely result from the transformation of the retinoids into vitamin A acid (retinoic acid).

For many years now, vitamin A acid has been banned in skin care products, however still is licensed in dermatologic formulations under the terms tretinoin and isotretinoin. Retinoids have an irritation threshold which means that vitamin A acid effects such as erythema are observed in higher concentrations or in combination with penetration supporting nanodispersions.

In pregnant women an oral overdose of vitamin A may cause damage to the health of the unborn baby. This has to be kept in mind for the nutrition (liver, innards). The human body needs about 2,500 IU (0.75 mg) per day via oral intake, 10,000 IU via oral ingestion are considered to be safe. Cosmetic active agent concentrates may contain up to 6,000 IU/ml which seems to be quite an amount but should be put into perspective to the small amounts per application, the losses during the passage through the skin barrier and the rather quick local metabolization in the epidermis. There is no information on systemic relevant concentrations. A study could show that a 21 day application of 0.3% Retinol and 0.55% Retinol Palmitate (30,000 IU = 9 mg) once a day on a skin area (back, thighs) of 3,000 cm² has no measurable influence on the plasma level⁵. The Federal Institute for Risk Assessment (BfR) has no

objections against its application twice a day (0.3% in facial cream, 0.05% in body lotion)⁶.

An important item for the basic skin care is the protection of the skin barrier - preferably by following the natural physiological composition of the skin: lipid substances, ceramides, phytosterols, long-chained fatty acids and moisturizers. With regard to additional active agents, it should be kept in mind that they are not designed for the needs of the pregnant woman and that tolerance tests do not include potential influences on the unborn baby. It is suggested to gather comprehensive information before using highly dosed natural extracts and modern anti-aging agents.

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⁵ Nohynek GJ, Meuling WJA, Vaes, W., Lawrence RS, Shapiro S, Schulte S, Steiling W, Bausch J, Gerber E, Sasa H, Nau H, Repeated topical treatment, in contrast to single oral doses with Vitamin A-containing preparations does not affect plasma concentrations of retinol, retinyl esters or retinoic acids in female subjects of child-bearing age, Toxicology Letters, 163 (1), 65-67 (2006)

⁶ 5. Sitzung der BfR-Kommission für kosmetische Mittel, Protokoll der Sitzung vom 6. Mai 2010