Understanding which ingredients are prohibited during pregnancy and lactation.

Abstract

Q Many of my female patients complain about acne, unwanted hair growth, and other skin problems that have only developed since they became pregnant. Are products used for these types of benign skin conditions safe to use in pregnancy, as it is understandable that women want to look their best at this important time in their lives?

A With the exception of hydroquinone, which has a relatively high systemic absorption rate, and tretinoin, for which the evidence is controversial, these products act locally and therefore produce minimal systemic levels. Consequently, in most cases women can deal with these cosmetically unappealing skin conditions without compromising the safety of their unborn children.

Absorption of products following topical use

Agent	Absorption
Benzoyl peroxide	Not detected in serum. Small amounts of the metabolite benzoate are absorbed and easily eliminated [2, 3]
Tretinoin	Endogenous vitamin A levels remained unchanged after repeated applications of 0.05% tretinoin [4]
Clindamycin phosphate	Not detected in plasma [5]
Erythromycin	Not detectable in serum [6]
Salicylic acid	Undetectable from up to 25% in normal skin (depends on vehicle, pH, strength, and quantity applied). Levels might be higher when applied to damaged skin [7]
Glycolic acid	Up to 27% is absorbed into the skin, dependent on pH, concentration, and time [8]
Hydroquinone	35%?45.3% is systemically absorbed through the skin [9]
Sunscreens (oxybenzone, octocrylene, octisalate)	Below the limit of detection up to 8.7% [10, 11]
Dihydroxyacetone (self-tanning)	Estimated at 0.5% systemically available [12]
Depilatory products	
• Thioglycolic acid	Human studies on systemic absorption of thioglycolic acid have not been conducted
• Sodium, calcium, and potassium hydroxide	The amount found in consumer products, which would come in contact with skin, would be negligible compared with daily dietary intakes of these ions and therefore would not increase serum levels [13]
Hydrogen peroxide (skin bleaching)	In an in vitro study involving human skin, hydrogen peroxide was detectable in the dermis only after the application of high hydrogen peroxide concentrations for several hours [14]

Women experience many physiologic changes during pregnancy, including increases in androgen levels. This might lead to development or worsening of acne vulgaris and an increase in hair growth on various parts of the body.

Topical treatment options for acne often include retinoids, antibacterials, and agents such as benzoyl peroxide and salicylic acid. Other agents used to improve the appearance of skin, or used in skin maintenance, include the following: hydroquinone found in skin-lightening agents; avobenzone, octinoxate, and oxybenxone found in sunscreens; and dihydroxyacetone found in self-tanning agents. Common topical agents used for removing hair or reducing its appearance include salts of thioglycolic acid and sodium, calcium, and potassium hydroxide found in depilatory creams, or hydrogen peroxide found in hair-bleaching creams. Table 1 14 presents absorption of topical agents.

Table 1: Absorption of products following topical use

Topical retinoids

The amount of drug absorbed from the skin when using this product is very low; however, there are 4 published case reports of birth defects in the literature associated with topical tretinoin use, which are consistent with retinoid embryopathy. The role of the topical retinoids in these cases remains controversial,[15-18] as 2 prospective studies that examined use during the first trimester of pregnancy with 96 and 106 women did not find an increased risk of major malformations or evidence of retinoid embryopathy.[19,20] However, until data on larger cohorts are collected, women should not be encouraged to use topical retinoids during pregnancy.

Topical antibacterials

Clindamycin and erythromycin are used either alone or in combination with other agents as topical treatments of acne. A surveillance study examining oral or topical use of clindamycin reported no increased risk of malformations among 647 women with use in the first trimester.[21] Similarly, there have been no increased rates in adverse outcomes documented in several studies evaluating systemic use of clindamycin in the second or third trimester of pregnancy.[22,23] Furthermore, oral use of erythromycin in pregnancy has not been associated with teratogenicity in several thousand women.[21,24]

Benzoyl peroxide

When benzoyl peroxide is applied topically, only 5% is absorbed through the skin, and then it is completely metabolized to benzoic acid within the skin and excreted unchanged in the urine.[2,3] No studies on the use of this preparation in pregnant patients have been published; however, systemic effects on a pregnant woman and her child would not be expected and therefore use of this product during pregnancy would not be of concern.[25]

Salicylic acid

Topical salicylic acid is an ingredient in a number of cosmetic and acne products and systemic absorption varies.[7] A number of large studies have been published in which researchers examined the outcomes of women who had taken low-dose acetylsalicylic acid during pregnancy and there was no increase in the baseline risk of adverse events, such as major malformations, preterm birth, or low birth weight.[26] No studies have been conducted in pregnancy on topical use; however, as such a relatively small proportion is absorbed through the skin, it is unlikely to pose any risk to a developing baby.

Glycolic acid

Glycolic acid is an alpha hydroxy acid found in many cosmetics used to treat acne. There have been several animal studies demonstrating adverse reproductive effects when glycolic acid was administered in high doses, much larger than those used in topical cosmetic products in humans.[27] Studies examining the use of glycolic acid in human pregnancy have not been conducted; however, using topical glycolic acid during pregnancy should not be of concern, as only a minimal amount is expected to be absorbed systemically.[28]

Skin-lightening agents

Hydroquinone is used clinically as a topical depigmenting agent for conditions such as chloasma and melasma, and it is used cosmetically as a skin-whitening agent. It has been estimated that 35% to 45% is systemically absorbed following topical use in humans.[9] A single study has been published involving the use of hydroquinone during pregnancy with no increase in adverse events; however, the sample size of pregnant women was small.[29] Based on available data, hydroquinone use during pregnancy does not appear to be associated with increased risk of major malformations or other adverse effects. However, because of substantial absorption compared with other products, it is best to minimize exposure until further studies can confirm safety.

Self-tanning agents

Dihydroxyacetone is a colour additive that is found in self-tanning products to produce an artificial tan. Colour develops following topical application owing to dihydroxyacetone binding to amino acids in the stratum corneum. These products contain dihydroxyacetone in concentrations ranging from 1% to 15%, and when applied topically, systemic levels are minimal (0.5%)[12]; therefore, use during pregnancy would not be of concern.

Topical hair removal and bleaching agents

When addressing issues of hair removal, or reducing the appearance of hair, various topical agents are available, such as depilatory and hair-bleaching creams. According to Health Canada guidelines, thioglycolic acid is permitted in depilatory products at concentrations equal to or less than 5% with a pH of 7 to 12.7.[31]

Sodium, calcium, and potassium hydroxide, which are also found in depilatory creams, disassociate into sodium, calcium, potassium, and hydroxide ions. These ions are found abundantly in the body, and the amount of these chemicals found in consumer products that would come in contact with skin would be negligible, especially compared with the average daily dietary intake. In addition, although they might permeate the skin, the systemic absorption of these ions is minimal and therefore they do not increase serum levels and would not be considered a problem for use during pregnancy.[13,32]

In an in vitro study involving human skin, hydrogen peroxide was detectable in the dermis only after the application of high hydrogen peroxide concentrations for several hours. However, because cosmetic products such as hair-bleaching creams contain low concentrations of hydrogen peroxide, it is unlikely that substantial amounts are absorbed after topical application. In addition, once absorbed, hydrogen peroxide is rapidly metabolized.[14] Therefore, use of these products during pregnancy is not expected to be a concern when done in moderation.

Conclusion

Apart from hydroquinone (which is absorbed systemically in fairly substantial amounts and should be used very sparingly) and topical retinoids (owing to the troubling case reports), skin care products are not expected to increase the risk of malformations or other adverse effects on the developing fetus. Consequently, pregnant women can look their best without compromising the health of their unborn children.

Based on the above, AlumierMD still strongly recommends consulting with your physician during pregnancy.

AlumierMD Lightening Lotion does contain 2% Hydroquinone which, as stated above, is not recommended in pregnancy.

AlumierMD products that contain retinol, which is not recommended during pregnancy, are as follows;

- Retinol Eye Gel
- HydraLight
- Retinol Resurfacing Serum 0.25%
- Retinol Resurfacing Serum 0.50%
- Retinol Resurfacing Serum 1.0%
- Neck and Décolleté Firming Cream

AlumierMD recommends that professional treatments only be performed on the recommendation of your physician.

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