Ingredients for Ethnic Skin & Hair

Racial variability in skin and hair function is an area in which available information often conflict leaving still many open questions: Is deeply pigmented skin different from fair skin in terms of responses to chemical and environmental insults? Is skin care and hair the same? Are there different risks among racial groups of developing a skin disease after exposure to the same insults?

Different Skin Structure

As shown in several clinical studies the barrier function (determined as transepidermal water loss), skin conductance, skin thickness, water content of the upper layer of the skin, and skin mechanical properties differ among various ethnic groups including whites, blacks, and Hispanics. Differences are primarily marked in biomechanical features, such as skin extensibility, skin elastic modulus, and skin recovery.

Differences in Skin Function

Compared to white skin, black skin has been shown to have:

- Equal thickness
- Equal size of skin cells
- Increased number of cell layers
- Increased resistance to stripping
- Increased recovery after stripping
- Increased lipid content
- Increased electrical resistance
- Increased desquamation
- Decreased amount of ceramides
- Different reactivity of blood vessels

Further studies has shown that irritation revealed a different pattern of reaction in whites and blacks after exposure to harsh chemicals. In particular, blacks and Hispanics developed stronger irritant reactions after exposure to sodium lauryl sulfate (a common surfactant in commerical cleansing products as shampoos and body washes) as whites did.

On the other hand, blacks were found to be generally less susceptible to other known skin irritants and sensitizers as, for example, dinitrochlorobenzene, an organic chemical used occasionally to treat warts. This may be explained by a different reactivity of blood vessels in black skin as compared to white skin since hyperemic reactions (blood flow in the skin) after application of chemical compounds to the skin (e.g. clobetasol) have been found to be significantly less in black skin than in white skin. However, much remains to be done to understand the various mechanisms underlying the different clinical expressions.

Structure and Composition of the Hair

Experimental evaluations of hair failed to demonstrate biochemical differences among ethnic groups, but some structural differences are seen. In cross section, African American hair tends to be more elliptical in shape, with the hair follicle showing a spiral shape as well. Asian hair has a round hair shaft with a very large diameter. Caucasian hair tends to appear structurally between that of Asian and African American hair. The behaviors of the hair shaft with various insults such as heat, combing, and chemicals have yet to be quantified in population-based studies.

Characteristics of African-American Hair

The most common hair and scalp complaints from African-Americans include hair damage, breakage, scalp itching, dandruff, scalp flaking, and hair loss over the crown of the scalp and temporal areas. African-American hair is assymetrical from root to tip, a structure that is shared among curly hair types, according to research presented at the L'Oréal Ethnic Hair and Skin Research symposium last October. Furthermore, the tightly coiled shape of African-American hair leaves the cuticle more susceptible to dryness and damage from heat styling, chemical processes, and the sun. African-American hair naturally has a curl pattern. Whereas an increasing number of people wear very free, curly, unstructured looks, relaxed hair is still a major trend among African-Americans as sales of hair relaxing products as conditioners and other deep conditioning treatments rose by 37.3% last year in the US. Moreover, about 75% of African-American consumers use chemical relaxers, which is the largest ethnic hair care category. In 2004 African-American chemical relaxer sales grew 3.5% to $33.5 million. Although chemical relaxing is known to be damaging to hair, it is preferred due to the versatility it offers.

Hair Relaxing Ingredients

Chemical hair straightening, known as relaxing, involves a process where the basic structure of overly curly or wavy hair is changed into a straight form. There are three basic types of hair relaxers including sodium hydroxide, guanidine hydroxide, and ammonium thioglycolate. Sodium hydroxide is the strongest of the three relaxers. It is a caustic type of chemical that actually softens hair fibers. The chemical also causes the hair to swell at the same time. Sodium hydroxide solution penetrates into the middle of the hair shaft and breaks the cross-bonds of proteins. The higher the strength of sodium hydroxide (5-10%) and the higher the pH (10-14) and the faster the straightening solution will take hold.

Guanidine hydroxide (no-lye relaxers), tend to be less damaging than sodium hydroxide. However, they still de-fat the scalp. Guanidine hydroxide relaxers usually require conditioning treatments before and after.

Ammonium thioglycolate (thio relaxers) is less effective and less damaging than the other two relaxers. With a pH of 9-9.5, however, it still requires neutralization.

Usually, a protective petroleum cream is applied to the scalp and other areas of the hair that have been previously straightened to prevent over processing, hair breakage or skin irritation. After the chemicals have been rinsed out with warm water, a neutralizer is then applied to the hair to decrease the high alkaline pH which may make the hair swell and break. Thereafter, a conditioner is applied (sometimes also before the relaxer), which can be a cream conditioner or a protein or liquid conditioner.

Protectants and Natural Ingredients

Relaxed hair, especially when double-processed (relaxed and colored) is fragile, dry and needs protection. Leading products contain a mixture of natural humectants, natural emollients, body-enhancing polymers (silicones), proteins, anti-oxidants and amino acids to seal moisture into the hair and to keep the hair soft and conditioned. The following list are ingredients that have been shown to be very effective to equalize the moisture level in hair while adding humidity and moisture barriers to prevent frizz and maintain hairstyles.

Ethnic Hair Protectants & Humectants

- Proteins (wheat protein, collagen, silk protein)
- Silicones
- Vitamin B5
- Natural oils (avocado oil, Brazil nut oil, jojoba oil/wax, grape seed oil)
- Aloe vera
- Botanicals (chamomile, lavender, tea tree, rosemary, passionflower)

Sources:
McMichael AJ. Ethnic hair update: past and present. Journal of American Academy of Dermatology 2003;48:127
Berardesca E, et al. Ethnic skin overview of structure and function. Journal of American Academy of Dermatology 2003; 48: 127

T. Bombeli, MD

Copyright by Somerset Cosmetic Company, P.O. Box 3372, Renton, WA 98056
www.makingcosmetics.com