Global View on Extrinsic and Intrinsic Factors Affecting Hair Fiber Quality of Life

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Hair aging comprises weathering of the hair shaft, decrease of melanocyte function and hair production that result in changes in hair colour, production, and structural properties with effect on overall appearance and manageability of hair. Depending on the individual's original hair colour, quantity, and quality, lifestyle, dietary and hair care habits, there is great variability in the age of onset of first signs of aging.

The study of hair aging focuses on two main streams of interest: First, the esthetic problem of aging hair and its management; second, the biological problem underlying the aging process.

Aging is a complex process involving genetic, hormonal, and environmental mechanisms. As the skin, the hair is subject to intrinsic and extrinsic aging. Both occur in conjunction and are superimposed on each other. Experimental evidence supports the hypothesis that oxidative stress plays a major role in the aging process. In analogy to Harman's original free radical theory of aging, a free radical theory of greying has been proposed. In addition, gene expression analysis has shown that markers for oxidative stress and inflammation are upregulated in senescent alopecia, while in androgenetic alopecia dermal papilla cells in culture have shown premature senescence in association with increased sensitivity to environmental stress.

Extrinsic factors with impact on hair fiber quality include: exposure to UVR, oxidative colorants, pollutants, and scalp health. Intrinsic factors include: smoking, and oxidative metabolism in relation to the nutritional and general health status.

New insights into the role and prevention of oxidative stress either of extrinsic or intrinsic origin open new, multitargeted strategies for maintenance of healthy and beautiful hair in the young and old.