AESTHETIC AND COSMETIC DERMATOLOGY (LASERS SEPARATE CATEGORY)

BIOLOGICAL INSIGHT OF DULL SKIN: THE MOST COMMON SKIN COMPLAINT AMONG YOUNG WOMEN

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Introduction: Dull facial skin, described as lack of radiance or glow which are associated with young healthy skin, is one of the most common skincare complaints regardless of ethnicity. Despite this high level of concern, very little optical, physiological and biological data have been reported.

Objective: Gain fundamental insights into the etiology of dull skin pertaining to facial skin features and the underlying biology by comparing with non-dull skin

Materials and Methods: 150 Chinese women (ages 20-50) assessed by expert visual graders (calibrated to native grading) to possessing either dull skin (n=63) or non-dull skin (n=87) were enrolled in the study. Standardized facial images and biometric measures were collected along with cheek skin biopsies. Facial images were analyzed for various appearance features. Laser Capture Microdissection was conducted to fractionate biopsies into 3 compartments; suprabasal epidermis, basal epidermis and dermis. Transcriptomic analysis using Affymetrix HG-U219 gene arrays was performed on each compartment to identify unique biological themes or expression patterns (dull-signature). Transcriptomic patterns of in-vitro tert-keratinocytes treated with various compounds were compared to the dull-signature.

Results: Dull skin subjects had darker/yellower, more uneven/spotted pigmentation, rougher texture and less hydrated skin compared with age-matched non-dull subjects. Transcriptomic analysis also identified upregulation of pigmentation pathways and mTOR signaling. Interestingly, transcription regulation was an overrepresented theme among down-regulated genes across all age groups and compartments, indicating an overall disruption/incoordination of transcriptional activity in dull subjects. Transcriptional analysis of In-vitro skin cells treated with niacinamide and Galactomyces Ferment Filtrate (GFF) indicates a shift of the dull-signature towards a non-dull state.

Conclusions: We characterized unique facial skin features of dull skin and found pigmentation pathways and the uncoordinated transcription activity are the transcriptome hallmarks. We also identified niacinamide or GFF may help normalize the disrupted gene expression regulation, thus can be effective to improve dull skin.