Filaggrin for Treatment of Dermatological Disorders

Ichthyosis vulgaris is a skin barrier disease that is the result of insufficient filaggrin (FLG). In some cases, the loss of filaggrin expression may result in atopic dermatitis, a common skin disease characterized by itchy, scaly and often inflamed skin. There are currently no therapies that treat the underlying cause of these dermatological disorders. In healthy patients, the FLG protein is expressed in the cytoplasm of epithelial cells and plays an essential role in the proper keratinization and squamation of epithelial cells, formation of the epidermal barrier, and skin hydration. A lack of filaggrin protein due to mutations in the flg gene is often associated with ichthyosis vulgaris or atopic dermatitis.

Dr. Stout’s therapeutic approach for these disorders is the first to target the underlying etiology, and employs a recombinant filaggrin, derived from a single flg repeat combined with flanking sequences for processing, and a cell importation signal. Studies conducted by Dr. Stout and his colleagues have demonstrated:

- Robust cell internalization of rFLG+RMR to cytoplasm
- Topical application to human skin models results in cell uptake at pathologically relevant layers
- rFLG+RMR is internally processed to functional monomeric size

Topical application of rFLG+RMR restores the cornified envelope in filaggrin-deficient mice. It also reverses the abnormal flaky phenotype and improves barrier function.


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