

QUALITY OF LIFE, QUALITY OF CARE, AND PATIENT SAFETY

## DEVELOPMENT OF A FULL-THICKNESS SKIN MODEL TO MIMIC THE FRAGILE SKIN OF THE ELDERLY: SKIN CARE PROTECTION WITH RHEALBA® OAT PLANTLET EXTRACT

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**Introduction:** The proportion of adults over 60 years of age is increasing and age-related changes in skin integrity and barrier function make senior skin more “fragile” and susceptible to skin pathologies (xerosis, pruritus, infections). The development of specific skin care products for the elderly might thus improve their quality of life and help them to age better.

**Objective:** The aim of this study was to develop a full-thickness skin equivalent model that presents the characteristics of the fragile skin of elderly and that could be used for topical product evaluation.

**Material and Methods:** The skin substitute was chronically exposed to ultraviolet A (UVA) and their effects on the different skin compartments (dermis, dermo-epidermal junction (DEJ) and epidermis) were investigated using laser scanning confocal microscopy (LSM) and transmission electron microscopy.

**Results:** The skin model confirmed that chronic UVA exposure induced an important disruption of the elastic network (fibrillin and elastin), and a loss of density in the dermis. In response to UVA, the DEJ was also disorganized and presented a loss of homogeneity in the lamina but also a decrease in the anchoring fibers. Then, a defect in cell junctions such as the tight junction (claudin 1) and desmosomal markers (desmoglein 1, desmocollin 1) was observed, suggesting a major skin barrier alteration, as described in the fragile skin of the elderly. The benefits of a formula containing Rhealba® Oat Plantlet Extract were also evaluate to improve the skin fragility in the cutaneous model. The formula restored the elastic system, improved the DEJ cohesion, restored claudin 1, but also desmosomal expression and ultrastructure.

**Conclusion:** The full-thickness skin model was able to mimic the fragile skin of the elderly and was used to demonstrate that a dermo-cosmetic product containing Rhealba® Oat



Plantlet Extract could afford an efficient skin care improvement.

