



AESTHETIC AND COSMETIC DERMATOLOGY (LASERS SEPARATE CATEGORY)

## PEPTIDES INCREASE DERMAL MATRIX BIOMARKERS IN VITRO

*L Mullins<sup>(1)</sup> - M Tamura<sup>(1)</sup> - R Osborne<sup>(1)</sup>*

*Procter And Gamble, Beauty Technology, Cincinnati, United States<sup>(1)</sup>*

**Introduction:** Collagens and elastin, as major structural proteins of the extracellular matrix, contribute to the strength and resiliency of skin. Minor collagens such as collagens V and VII are essential for proper collagen filament and basement membrane formation, respectively. Enzymes such as Lysyl oxidase-like I and III play a key role in the formation of crosslinks in collagen and elastin fibers. We have previously reported that dipeptide Pal-KT can lead to increased in vitro expression of major collagens I and III. This work focuses on a combination of Pal-KT, Pal-KTTKS, and tripeptide-3 to boost both collagen and elastin pathways in vitro.

**Objective:** To determine changes in dermal marker gene expression occurring in fibroblasts treated with a peptide complex.

**Materials and Methods:** Dermal (BJ) fibroblast cultures were treated in vitro for 6 and 24 hours with the peptide complex of Pal-KT, Pal-KTTKS, and Tripeptide-3. RNA was extracted, and mRNA expression was analyzed by RT-PCR. The mRNA biomarkers evaluated were selected as representative of dermal fibroblast-specific processes and were evaluated utilizing the Wafergen platform. The biomarkers included ones related to dermal matrix & assembly (elastin, collagen V) and basement membrane (collagen VII, perlecan). The gene expression was analyzed, and the in vitro responses were compared to gene expression patterns from in vivo samples from older donors.

**Results:** Treatment of human dermal fibroblasts in vitro with the peptide complex increased expression of minor collagens, collagen assembly, and basement membrane related genes, including collagens V and VII, elastin and perlecan.

**Conclusions:** Based on these results, a complex of peptides, Pal-KT, Pal-KTTKS, and Tripeptide-3, demonstrates effects in vitro that could be related to maintaining proper collagen assembly in skin.

