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**Ultrastructural changes induced by mechanical stimulation of the aged skin.**

**M. HAFTEK<sup>1</sup>, A. Jeudy<sup>2</sup>, E. Colomb<sup>1</sup>, F. Fanian<sup>2</sup>, P. Humbert<sup>2</sup>**

<sup>1</sup> University Lyon 1, EA4169 "Physiological, clinical and therapeutic aspects of the skin barrier function", INSERM US 7- CNRS UMS 3453- SFR Lyon-Est Santé, Lyon; <sup>2</sup>Research and Studies Center on the Integument (CERT), Department of Dermatology, Clinical Investigation Center (CIC BT506), INSERM UMR1098, FED4234 IBCT, University of Franche-Comté, Besançon, France.

Mechano-transduction consists in the conversion of mechanical signals into biochemical responses. The impact of mechanical stimulation on dermal fibroblasts and on the structure of conjunctive tissue has been previously demonstrated whereas loss of mechanical tension appears to be the major factor underlying decreased collagen synthesis in aged skin. We examined structural changes induced in human facial skin after 2 months of mechanical stimulation. Skin biopsies were taken under local anesthesia in 10 subjects, on the treated and non-treated sides, after 24 sessions of massage with a new medical device (LPG systems, Valence, France). Tissue samples fixed in 3% paraformaldehyde were embedded in LRWhite resin and used for immuno-detection of whereas 2% glutaraldehyde fixation with 1 % OsO<sub>4</sub> post-fixation preceded Epon embedding and standard ultrastructural examination. Separate tissue fragments were used for *in vitro* assays, i.e.: dosage of hyaluronic acid, elastin, type-I collagen, MMP9 and retraction of dermis equivalent with isolated fibroblasts. Biometrological assessments were also performed. A significant improvement of various clinical signs associated with skin aging was noted after treatment and correlated well with an increased expression of the dermal components revealed biochemically. Ultrastructural signs of fibroblast activation were accompanied by remodeling of the dermal structure in 4 out of 10 cases. Immunogold labeling using antibody to  $\alpha$ -SM actin was present in virtually all fibroblasts and was only increased in the good responders (half of the subjects). Our results confirm the restructuring effect of the mechano-stimulation procedure in some patients presenting age-related changes in their facial skin.