AESTHETIC AND COSMETIC DERMATOLOGY (LASERS SEPARATE CATEGORY)

HYALURONAN HYBRID COOPERATIVE COMPLEXES SUPPORT MUSCLE DERIVED CELL DIFFERENTIATION IN VITRO: NEW PROSPECTIVE FOR REGENERATIVE MEDICINE

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Introduction: Experimental investigations beside clinical studies explored the potential of hyaluronic acid (HA) for healthy. In different form, HA showed numerous biological activities: wound healing, anti-inflammatory function and anti-aging. Due to its rheological properties, HA is active to hold skin elasticity representing an innovative anti-aging procedure with very limited safety concern.

Objective: Aim's study was to evaluate hyaluronan based gel effects on muscle derived cell proliferation and differentiation.

Materials and Methods: Comparative analyses were performed using: high (H-HA) and low molecular weight (L-HA) hyaluronans, commercial hybrid cooperative complexes (HCCs) of hyaluronan obtained through the NaHyCo® Technology. Muscle cells derived from rat were characterized using immunofluorescence staining for anti-miogenin differentiation marker. To evaluate the protective ability of HA and HCCs against oxidative stress, cells were subjected to H2O2. SOD-2, COX-2 and iNOS, were evaluated by western blotting analyses. An in vitro model of muscle atrophy was developed. Differentiated muscle derived cells were treated with 100 ng/ml of TNF-α for 24 h, along with hyaluronans. MuRF-1 and atrogenin were analyzed as specific muscle atrophy proteins.

Results: MTT assay showed that HCCs and H-HA increase cell growth and proliferation respect to L-HA and control. Cell viability is reduced by H2O2. Hyaluronans preserved viability and influenced differentiation. In particular, HCCs had a beneficial effect on myo-markers evaluated.

Conclusions: These evidence support that HCC, beyond linear HA, is a promising non invasive procedure for skin disorders at multilevel face layers with a specific muscle cell

protection against damage/stress.