

Hyaluronic acid enhance polynucleotides effect on cultured dermal fibroblasts

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Polynucleotides (PNs) and Hyaluronic Acid (HA) are compounds widely used to promote tissue regeneration, mainly in cutis and cartilage. PNs efficacy has been demonstrated *in vitro* on cultured dermal fibroblasts and osteoblasts, and in animal models where it has been demonstrated to increase dermal regeneration. PNs effects are mediated mainly through the activation of P2P purinergic receptors, which are expressed on fibroblasts and on mesenchymal-derived cells. HA, the most abundant and non sulphorate glycosaminoglycan (GAG) produced by fibroblasts, is involved in several biological effects which are different in response of the sizes of HA molecules. When used as non fragmented, (about 2 Kd) HA has both an anti-inflammatory and antiapoptotic effects and it stimulates cell migration.

In this study we have analyzed the effect of a mixture of PNs and HA, in order to verify a possible synergic effect, on human dermal fibroblasts. Effects on cell proliferation were evaluated with MTT assay and cell culture protein content. Dose-response curves showed higher effects on cell proliferation when PNs were used in the presence of HA. In particular we observed that, the addiction of HA determined a peak of activity with a reduction of of about a third of PNs dose.

These preliminary data are suggesting for a joint use of HA and PN in tissue regeneration, mainly in clinical situation, like for example cutaneous burn in with the presence of PN induce a more rapid regeneration by means of more rapid cell ingrowth, collagen and VEGF production. At the same time HA support cell migration and contribute to reduce inflammatory processes.

Keywords: Polybucleotides, Hyaluronic Acid, P2P Receptor