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## **Alpha-Lipoic Acid Modulates Extracellular Matrix and Angiogenesis Gene Expression in Non-healing Wounds Treated with Hyperbaric Oxygen Therapy.**

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Alpha-Lipoic acid (LA) has been found previously to accelerate wound repair in patients affected by chronic wounds who underwent hyperbaric oxygen (HBO) therapy. Because proteinases are important in wound repair, we hypothesized that LA may regulate matrix metalloproteinase (MMP) expression in cells that are involved in wound repair. Patients undergoing HBO therapy were double-blind randomized into two groups: the LA group and the placebo group. Gene expression profiles for MMPs and for angiogenesis mediators were evaluated in biopsies collected at the first HBO session, at the seventh HBO session, and after 14 days of HBO treatment. ELISA tests were used to validate microarray expression of selected genes. LA supplementation in combination with HBO therapy downregulated the inflammatory cytokines and the growth factors which, in turn, affect MMP expression. The disruption of the positive autocrine feedback loops that maintain the chronic wound state promotes progression of the healing process.

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### Related Links

Alpha-Lipoic acid supplementation inhibits oxidative damage, accelerating chronic wound healing in patients undergoing hyperbaric oxygen therapy. [Biochem Biophys Res Commun. 2005] PMID:15950945

Thymosin beta4 promotes matrix metalloproteinase expression during wound repair. [J Cell Physiol. 2006] PMID:16607611

Expression of matrix metalloproteinases and growth factors in diabetic foot wounds treated with a protease absorbent dressing. [J Diabetes Complications. 2006] PMID:16949521

Effects of hyperbaric oxygen on gene expressions of procollagen, matrix metalloproteinase and tissue inhibitor of metalloproteinase in injured medial collateral ligament and anterior cruciate ligament. [Knee Surg Sports Traumatol Arthrosc. 2007] PMID:17187281

Proteinases, their inhibitors, and cytokine profiles in acute wound fluid. [Wound Repair Regen. 2000] PMID:11115151