

Conference on Tissue Connective Matrix

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Copper-Peptide Tissue Regeneration: Biology and Clinical Uses

Numerous products based on copper-peptide complexes are increasingly finding clinical and cosmeceutical uses. The biological basis for these actions is GHK, a peptide generated during tissue damage that has a very high affinity for copper (2+). GHK-Cu is also a normal constituent in human plasma existing at approximately 200 ng/ml at age 20 and dropping to 80 ng/ml at age 60.

GHK-Cu, at hormonal levels, is a chemoattractant for repair cells and activates a plethora of regenerative activities (angiogenesis, production of collagen, elastin, proteoglycans, glycosaminoglycans, etc) plus activation of metalloproteinases involved in tissue remodeling. Copper-peptide complexes are used to stimulate the repair of damaged skin and bone, the healing of ulcerated stomach and intestinal lining (e.g. inflammatory bowel disease), improve the take of hair transplants and stimulate hair growth.

In aged human skin, copper-peptide creams thicken skin, improve elasticity, and increase the density of the subcutaneous fat layer. GHK-Cu blocks ferritin channels and the release of tissue damaging free (oxidative) iron after injury, thus blocking iron catalyzed lipid peroxidation that often occurs after injury and also interleukin-1 damage to pancreatic islet cells at 10^{-10} M. The three dimensional structure of GHK-Cu is strikingly similar to many pharmaceutical anti-ulcer (stomach) medicines.

Two potential uses for copper-peptides that deserve more study are (1) the reduction of scars and skin lesions and (2) the systemic activation of wound healing prior to surgical procedures.

References to the above can be found at: www.skinbiology.com/copperpeptideregeneration.html