Nutricosmetics in action: Anti-aging peptides from chicken skin
H. Wang, M. Betti, S. Bejjani.

Background

- Skin firmness, elasticity and hydration levels gradually lost with age.
- These changes originate in the dermis and correspond to a decrease in the ability of cells, particularly the fibroblasts, to regenerate the molecules which make up the extracellular matrix.

- Fibroblast, most commonly found cell in skin, is responsible for synthesizes the extracellular matrix (ECM) and collagen.

- Cosmetic Science has used many protein hydrolysates in order to fight skin ageing problems.

- Bioactive compounds secreted by the fibroblast cells such as fibrous proteins (collagen and elastin) and glycosaminoglycans (GAGs), were found to have positive effects in skin rejuvenation and skin cell rehydration.

  - Collagen peptides: stimulate the skin regeneration
  - Hyaluronic acid: non-sulfated GAGs, one of the most hydrophilic (water-loving) molecules and are used as "natural" moisturizer in skin-care products
  - Heparan Sulphate: the most biologically active GAG and is central regulatory element in wound healing due to its influences on collagen fiber formation and tissue repair

Source of bioactive compounds

From animal skin (bovine, pig fish and poultry)

- chemical, physical or enzematical extraction
- culture skin fibroblast cell in vitro

Cell Differentiation: fibril formation
- Collagen
- Hyaluronic acid
- Heparan sulphate

The effects of anti-aging compounds

What Does this mean?

- Nutricosmetics refers to nutritional supplements which are found to have beneficial effects on the function and structure of the skin.
- Heparan sulfate acts as an binding agent for the basic fibroblast growth factor (FGF-2) to the skin cell during wound healing process.
- Studies showed that the GAGs such as heparan sulphate from the extracellular matrix are responsible for binding the cytokines, which play important roles during wound healing, inflammation and skin regeneration
- Collagen peptide and hyaluronic acid act as stimulators for increasing skin cell growth.
- Chicken skin could be a new source of anti-aging compounds for nutricosmetic use

Acknowledgments

Contact Information

Dr. Mirko Betti, PhD
Associate Professor
University of Alberta
Phone: (780) 248-1598
E-mail: Mirko.Betti@ales.ualberta.ca