

13<sup>TH</sup> INTERNATIONAL CONFERENCE ON

## ADVANCED MATERIALS AND NANOTECHNOLOGY

OCTOBER 26-28, 2017 OSAKA, JAPAN

**Collagen-hyaluronan in colloidal silver****Andrea Kargerova**

Brno University of Technology, Czech Republic

Collagen and hyaluronan are natural biopolymers occurring in the human body as a materials for scaffold in tissue engineering, as a components of a bandage by wound healing processes, as an alternate fluid in human joints, as a space filling matter in plastic surgery and last but not least as a hydration matter in cosmetics. Hyaluronan exists in high concentrations during fetal skin development, is involved in cell migration and differentiation, and is the first macromolecule to appear in the ECM during tissue engineering repair. These two biomaterials dissolve in colloidal silver have been studied in this work for biomedical applications. Hayluronan HyActive (13kDa) from Contipro Biotech (Czech Republic) is produced biotechnologically and extracted from the cell walls of the bacteria *Streptococcus zooepidemicus*. Collagen from Inventia Polish Technologies Sp. z o.o., obtained from fish skins. Colloidal silver (20 ppm) obtained from Antibakterin (Czech Republic). The physical properties and finding of suitable concentration of biomaterials were measured by three methods. The suitable concentration and ratio of collagen-hyaluronan were measured by High resolution ultrasonic spectroscopy from Ultrasonic Scientific (Ireland) and Densitometer DSA 5000M from Anton Paar (Austria). The rheological properties were measured by Discovery Hybrid Rheometer from TA Instruments. By densitometric measurement was found that collagen-hyaluronan in colloidal silver was stable in temperature 20-50°C. Collagen-hyaluronan colloidal silver spray was tested for healing on human skin, for burn, frostbite, bedsore, varicose ulcer etc. Due to colloidal silver this spray could be applicate to raw wound. By densitometric measurement was found that collagen-hyaluronan in colloidal silver was stable in temperature 20-50°C. Collagen-hyaluronan colloidal silver spray was tested for healing on human skin, for burn, frostbite, bedsore, varicose ulcer etc. Due to colloidal silver this spray could be applicate to raw wound. The combination of collagen, hyaluronan and colloidal silver in ratio collagen:hyaluronan, 1:1 is the best ratio for good application in a spray form for healing of wound.

**Acknowledgements:** This research was supported by project No. LO1211 from the Czech Ministry of Education.

**Biography**

Andrea Kargerova presently associated with Materials Research Centre and Institute of Physical and Applied Chemistry, Faculty of Chemistry, Brno University of Technology. She has published numerous research papers and articles in reputed journals and has various other achievements in the related studies. She has extended his valuable service towards the scientific community with her extensive research work.

a.kargerova@seznam.cz

**Notes:**