EuroSciCon

EuroSciCon Conference on

Advanced Nanotechnology

April 18-19, 2019
Paris, France

Nano Res Appl 2019, Volume:5
DOI: 10.21767/2471-9838-C2-034

NANOSCALED POLYSACCHARIDES IN SOLUTION: SCALING LAWS OF HYALURONAN

Tahani Alfazani, Fathi Shaker Mohamed Elashhab and Lobna Sheha
University of Benghazi, Libya

Ionic polysaccharides (e.g. hyaluronan (HA)) are currently used in a range of sizes, or molar masses, in an increasing number of nanomaterials for biocompatible applications. The aim of this work is to predict the scaling law of HA, in aqueous salt solution, by applying simple and low-cost methods of green degradation and molar mass determination. In this respect, moderately concentrated solutions of native and different ultraviolet (UV) -degraded HA in NaCl aqueous solution were prepared. The corresponding molar masses were obtained via one-point method of viscosity measurements. It has been observed that the progress of molar mass production, via HA degradation, was UV-dose dependent. The graphical interpretation method of kinetic analysis confirmed the first order degradation rate, which is an indication of a random session on the glycosidic bonds. The viscosity data were treated via Flory-Fox's theory to get molecular parameters such as: the hydrodynamic radius (RH, η), radius of gyration (RG, η), coil density (Pcoin, η), critical concentration (C η*) and second virial coefficient (A2,η). It has been found that: RH, η and RG, η represents UV-dose decreases; while, Pcoin, η, C η* and A2,η represents UV-dose increases. The results were explained according to the influence of size and excluded-volume.

tahanialfazani 19@gmail.com