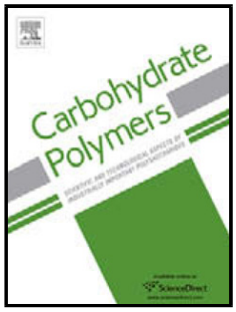

Title: Surface Behavior and Bulk Properties of Aqueous Chitosan and Type-B gelatin Solutions for Effective Emulsion Formulation

Authors: Jagadish Chandra Roy, Fabien Salaün, Stéphane Giraud, Ada Ferri, Jinping Guan

PII: S0144-8617(17)30628-8
DOI: http://dx.doi.org/doi:10.1016/j.carbpol.2017.06.001
Reference: CARP 12389

To appear in:

Received date: 26-1-2017
Revised date: 26-5-2017
Accepted date: 1-6-2017

Please cite this article as: Roy, Jagadish Chandra., Salaün, Fabien., Giraud, Stéphane., Ferri, Ada., & Guan, Jinping., Surface Behavior and Bulk Properties of Aqueous Chitosan and Type-B gelatin Solutions for Effective Emulsion Formulation.*Carbohydrate Polymers* http://dx.doi.org/10.1016/j.carbpol.2017.06.001

Surface Behavior and Bulk Properties of Aqueous Chitosan and Type-B gelatin Solutions for Effective Emulsion Formulation

Jagadish Chandra Roy[*,1,2,3,4], Fabien Salaün[1,2], Stéphane Giraud[1,2], Ada Ferri[3], Jinping Guan[4]

[1]University Lille Nord de France, F-5900 Lille, France

[2]ENSAIT, GMTEX, F-59100, Roubaix, France

[3]Department of Applied Science and Technology, Politecnico di Torino, Italy

[4]College of textile and Clothing Engineering, Soochow University, Suzhou, Jiangsu, 215123, China

**Correspondence: jagadish-chandra.roy@ensait.fr*

Highlight

- Chitosan-type B Gelatin coacervation occurs through electrostatic interaction.
- The coacervate formation was influenced by pH and concentration ratios of CH and GB
- Chitosan (CH) was found more surface active than type-B gelatin (GB).
- CH and CH-GB blend were found more efficient to stabilize emulsion than GB.

ABSTRACT

The behaviour of aqueous chitosan (CH), type-B gelatin (GB) and CH-GB coacervate was studied on oil-in-water emulsion formulation at various pH and concentration ratio. The coacervate was formed by phase separation at ratios CH:GB, 1:10 to 1:1 with total biopolymer concentrations of 0.55%-1.0% (w/v) at pH 4.0-5.5. Soluble complexes were formed below pH 5.0 and coacervate formation was confirmed at pH 5.0 and above by zeta potential and UV-spectroscopy measurements. The coacervate formation was found maximum at the CH-GB ratios of 1:10 and 1:5 at pH 5.5. Formulated emulsions (>10µm droplets) using 1% (w/v) chitosan and GB were found stable (+52.5mv and creaming index