

ANNUAL MEETING ON

BIOPOLYMERS AND DRUG DELIVERY SYSTEMS

OCTOBER 12-13, 2017 OSAKA, JAPAN

Efficiency of Brazilian xanthan encapsulation and associations in the microencapsulation of probiotics (*Lactobacillus acidophilus*)

Patricia Diaz de Oliveira, Júlia Borin Fioravante, Izadora Almeida Perez, Rosane da Silva Rodrigues, Ângela Maria Fiorentini and Angelita da Silveira Moreira
Federal University of Pelotas, Brazil

Probiotic microorganism's consumption generates several benefits when they are significantly viable in the products in which they are applied. However, some processing conditions are unfavorable to their survival, as well as the food's own characteristics and storage conditions. Due to the low viability of probiotics when added as free cells, different technologies have been used in order to increase their survival in food. Our study aimed to evaluate of *Lactobacillus acidophilus* encapsulation efficiency by the spray dryer using xanthan pruni, which is produced by a Brazilian strain of *Xanthomonas arboricola* pv pruni, as encapsulating agent and Aerosil® as dispersant. Different encapsulating solutions were prepared in according to a rotational central composite design (RCCD) ($p < 0.05$), using a full factorial 2^2 with triplicate at the central point, totaling 11 treatments. Glycerol was added at 20% relative to the total polymer mass. The microcapsules were produced in spray dryer (LabMaq MSD 1.0), with inlet temperature of 120 °C and outlet of 60 °C, with an air flow rate of 3 L.h⁻¹ and inlet speed of 0.4 l.h⁻¹. The microcapsules were stored in a desiccator at 25 °C. The survival percents were determined by comparing the concentration of viable microorganisms after the dryer process with the initial microbial concentrations. Xanthan pruni exerted positive effect on the microorganism viability within the studied range ($r = 0.9423$). The mathematical model generated ($\text{viability (\%)} = 75.10 + 1.90X_2 - 1.62A$) was predictive and significant within the studied range ($r = 0.667$). A positive influence of the concentration of xanthan pruni in the microbial viability after dryer process was observed; which was caused, probably, by thermal protection due to the microorganism's encapsulation. These results denote xanthan pruni as potential encapsulating agent to probiotics microorganisms.

Biography

Patricia Diaz de Oliveira is an Adjunct Professor at Federal University of Pelotas, Rio Grande do Sul, Brazil. She holds a degree in Chemical Engineering from the Federal University of Rio Grande and a Doctorate in Biotechnology from Federal University of Pelotas. Presently, she is doing research at the Biopolymers Laboratory of UFPel.

bilicadiaz@yahoo.com.br