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7th World Congress on

Bioavailability & Bioequivalence: BA/BE Studies Summit

August 29-31, 2016 Atlanta, USA

Starch-guar gum extrudates: Microstructure, physicochemical properties and *in vitro* digestion

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Starch-guar gum mixtures were obtained by extrusion using a three-variable Box-Behnken statistic design. Morphology, expansion index, viscosity, crystallinity and digestion *in vitro* of the extruded samples were analyzed through response surface methodology (RSM). The extrusion temperature and the moisture content were the factors that significantly affected the physicochemical properties of the samples. Starch-guar gum samples showed expansion index and viscosity up to 1.55 and 1,400 mPas, respectively. The crystallinity of the samples was modified by adding guar gum to the extrudates showing correlation between long-range order (X-ray diffraction) and short-range order (FTIR spectroscopy). Guar induced micro-structural changes and its role in gelatinization-melting processes was significant. The rate of glucose release decreased from 0.47 to 0.43 mM/min when the extrusion temperature decreased. However, adding guar gum to starch had no significant effect on glucose release. Overall, the extrusion temperature and the moisture content were the factors that significantly affected the physicochemical properties of the extruded samples.

Biography

Erich von Borries Medrano has completed his Master degree in Advanced Technology from Centro de Investigacion en Ciencia Aplicada y Tecnologia Avanzada - Instituto Politecnico Nacional (CICATA-IPN). He is a PhD Student of CICATA-IPN, a center focused on applied science and technology development. He is investigating how different additives results in resistant starch formation.

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