

Title: Evaluation of the spray drying in the combined system of cane juice concentrated and whey protein concentrate

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Sugarcane juice (JCP) and whey protein concentrate (WPC) are products of great interest from the nutritional value for their contribution of sugars and proteins and are susceptible of being transformed into powdered products to preserve their characteristics. In this work, the influence of spray drying conditions on the physicochemical properties of the JCP and WPC combined system was evaluated. A response surface methodology by central composite design was used, where independent variables were inlet air temperature (130-180 °C), outlet air temperature (75-90 °C), atomizer disk velocity (21,000-26,000 rpm) and contribution of WPC solids in the feed (40-90%). The drying process conditions had a significant effect ($p > 0.05$) on the effective yield, adhesion of solids in the dryer, moisture content, water activity, solubility, bulk density, particle size and morphology. The best operating conditions were inlet temperature of 130 °C, outlet temperature of 88 °C, atomizer disk velocity of 21,000 rpm and 78.83% w/w of WPC solids. The results showed that the combined system JCP and WPC can be converted into powder form by spray drying, with an effective yield of 80.13 ± 0.82% and obtaining adequate quality characteristics such as moisture content of 4, 3% (wet basis), water activity of 0.2014, solubility of 91.62% and bulk density of 0.44 g/ml.

Biography

Diana Carolina Ruano is an Agroindustrial engineer from the Universidad de Nariño, Colombia. Actually, she is studying a master degree in Agroindustrial Engineering in the Universidad Nacional de Colombia-sede Medellín. She has knowledge and experience in the use of agricultural waste, especially in the production of soil conditioners or organic fertilizers, as well as in the formulation of business plans, production projects, and research framed in the area of agro-industry. Actually, she is working with the spray drying of a combined system of sugar-protein with sugarcane juice and whey protein concentrate how raw materials.

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Session name/ number:
Category: Poster presentation