Stability of the physical and functional properties of coffee pré-mixes during storage

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The objective of this study was to evaluate the behavior of pre-mix formulated with sugar (70%), soluble coffee (15%), soy protein isolate (8%), maltodextrin (7%) and accacia gum (0.8% - over weight), during 6 months.

The methodologies of the analyse were: separation index (Kulkarni, Kulkarni and Ingle (1991) modified), dispersibility (according Kinsella, 1984), wettability (adapted from Hla & Hogekamp (1999)), porosity and apparent density (according to Peleg, 1983), particle density (according Pomeranz & Meloan, 1994), moisture (70 °C, vacuum, constant weight). The pre-mix was processed by two different systems: a standard powder process (mixer Ribbon Blender) (sample 1) and by agglomeration powder equipment (sample 2) (instantizing process- pilot vapour instantinizer ICF Industrie Cibec.) which can produce larger and porous powder granules compared with powder produced by mixer. Immediately after processing, the two samples were evaluated and it was observed that the sample 1 showed smaller particles sizes, porosity and particle density, and higher apparent density compared with the instant powder (sample 2). The functional properties (dispersibility, wettability and separation index), the sorption isotherms and the water absorption capacities of the two samples were similars. As the hygroscopicity of the samples was high, the products were packed with a low water permeability film, sealed and then stored for 6 months, at 25 °C and 75% relative humidity. The particle sizes, densities (apparent and particle), porosity, and color (L*\textsuperscript{*}, a* and b*) did not change over time. However, the water activity increased at 6\textsuperscript{th} month, showing absorption of moisture. After 3 months, the wettability increased for both samples, being higher to conventional powder (sample 1) than the instant one (sample 2), 13 and 80 times more the first value, respectively, pointed as lost of quality. It was concluded the instantizing process increased the stability of the packed powder product.