

QUALITY CHARACTERISTICS OF YOGHURT POWDER OBTAINED BY HYBRID DRYING METHODS

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Abstract

Yoghurt is one of the most appreciated dairy products due to nutritional qualities and sensorial characteristics. In the attempt to manufacture long shelf life products like instant healthy beverages or breakfast cereals, several methods for yoghurt powder obtaining have been reported. The greatest challenge in yoghurt drying is the preservation of quality characteristics after reconstitution. These characteristics are related to process parameters like the heating source, temperature and time. The main objective of this research is to study the influence of two hybrid drying methods (microwave followed by convection) on the quality characteristics of yoghurt powder.

The yoghurt powder was obtained from a commercial product (Greek yoghurt with 10% fat), being subjected to drying by conventional method (convection) and by two alternative hybrid methods (microwave treating at 105 and 210 W) followed by convection at 100 °C until constant mass. After reconstitution in distilled water, the samples were analyzed in terms of viscosity - rotational viscometer, texture - texture profile analysis, color - colorimetric method, microstructure - confocal microscopy and sensorial attributes.

The result of the study was an elaborately characterization of yoghurt powder from: rheological, textural, color, microstructural and sensorial points of view. In the same time, two hybrid drying methods have been developed. The results revealed that the application of 105 W microwaves reduced the drying time from 40 to 30 minutes. The rehydrated yoghurt presented lower viscosity and softer texture compared to the fresh sample due to the damage of the protein network, but the most affected was the sample obtained by classic method. The confocal microscopy showed lactose and protein aggregates which absorbed the lactic bacteria from the starter culture.

Hybrid drying methods (microwave-convection) lead to better quality characteristics of powder yogurt comparing to classic convection method.

Key words: *Yoghurt powder, Microwave, Reconstitution.*