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Cheese feed to powder: effects of cheese age, added dairy ingredients and spray drying temperature on properties of cheese powders

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Abstract:

The effects of cheese age and addition of dairy ingredients on cheese powder properties have not been previously investigated. Hence, the effect of addition 2% sodium caseinate plus 2% buttermilk powder (B2S2) or 4% buttermilk powder (BMP) were evaluated. The addition of these ingredients led to a decrease of the Power Law consistency index in cheese feeds made from 16 and 30 weeks old Danbo cheeses. Powders containing B2S2 presented homogeneous particle size distributions, lower amount of free fat and better flowability, due to improved fat emulsification, confirmed by confocal laser microscopy. Powders with BMP presented higher browning index, cohesiveness and spontaneous primary agglomeration. These powders were also more sensitive to an increased temperature difference (ΔT) between inlet and outlet spray drying temperatures, causing more browning. Cheese powder properties could thus be significantly improved by addition of 2% SC plus 2% BMP, whereas no improvements were observed using only BMP.

Key words: cheese feed; cheese powder; flowability; microstructure; buttermilk powder; sodium caseinate powder