

X-ray absorptiometry and ultrasound technologies for non-destructive compositional analysis of dry-cured ham

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Abstract

The characterization of dry-cured ham according to salt and fat contents is of great interest to industry and consumers. In this study, the feasibility of using non-destructive technologies such as X-rays and ultrasound (US) for this purpose was evaluated in dry-cured ham portions. Predictive models for fat and salt contents were based on the measurement of X-ray attenuation at different incident energies and the US velocity when the ham was at 2 and 15 °C. A semi-empirical model based on the US measurements was also developed. Salt content was better predicted by X-ray technology (RMSEV = 0.43%) than US (RMSEV = 0.69%) and their combination had little impact on the accuracy of the prediction. US predicted fat content slightly better (RMSEV = 6.70%) than X-rays (RMSEV = 7.00%), and their combination increased the accuracy of the prediction (RMSEV = 5.60%). Using the best models, 81% of samples were correctly classified into three salt content categories with X-rays whereas 71% of samples were correctly classified into three fat content categories by combining X-rays and US.