

Analyse rapide par spectroscopie proche infrarouge des acides gras des tissus adipeux du porc charcutier

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Rapid Analysis of Fatty Acids in Pork Fat using Near Infrared Reflectance Spectroscopy

To accelerate the development of strategies to improve the nutritional quality of pork meat through n-3 polyunsaturated fatty acids (PUFA) enrichment and the ability to follow, control and certify this nutritional quality demand a simple, quick and inexpensive tool for determining fatty acid profile. The feasibility of using near-infrared spectroscopy (NIR) for the prediction of the fatty acid profile in pork fat was tested. Forty (40) pigs were fed two different diets; 8 pigs were fed a control diet (commercial diet, 4% lipids) and 32 pigs were fed a n-3 PUFA enriched diet (extruded linseed supplementation at a 6% level) from 50 kg through to 110 kg BW. Different fat tissues were collected from different carcass sites. Fatty acid compositions were obtained using Gas Chromatography (conventional method) and infrared spectra using different market NIR Spectrometers. The regression method employed was Partial Least Squares (PLS). The best calibration results were found using spectrometers with no remote probe. They allowed the determination of saturated, mono, poly-unsaturated fatty acids with reasonable accuracy, regardless of fat tissue site. The content of n-3 PUFA in backfat was highly predictable ($r^2=0.92$, RMSEP=0.3) with NIR technology as C22:5n-3 compared to the other long-chain n-3 PUFA. The use of a fiber-optic probe in the assessment of infrared spectra could impair the prediction of saturated fatty acids (SFA) even if the quality of prediction of fatty acids of interest, such as C18:3n-3 ($r^2=0.91$, RMSEP=0.6), total monounsaturated ($r^2=0.86$, RMSEP=1.2) and poly-unsaturated ($r^2=0.94$, RMSEP=1.0) fatty acids, was good.