



## Use of near infrared spectroscopy as a predictor of color attributes in swine meat quality

Elton J. Granemann Furtado\*<sup>1</sup>, Ana M. Bridi<sup>2</sup>, Douglas F. Barbin<sup>3</sup>, Cátia C. P. Barata<sup>4</sup>, Ana P. A. da C. Barbon<sup>4</sup>, Nayara Andreo<sup>4</sup>, Maiara B. P. Braz<sup>5</sup>, Jessica Aliano<sup>5</sup>

\* Master student, <sup>1</sup>Programa de Pós Graduação em Ciência Animal, UEL; Rod. Celso Garcia Cid, Pr 445 Km 380; Londrina, Paraná, BRAZIL; <sup>2</sup>Professor Animal Science Department, UEL; <sup>3</sup>PhD student, Programa de Pós Graduação em Ciência dos Alimentos, UEL;

<sup>4</sup>Doctoral student, Programa de Pós Graduação em Ciência Animal, UEL; <sup>5</sup>Graduate student Animal Science, UEL;

\* eltonveterinario86@gmail.com

Traditional methods for meat quality assessment are time consuming and have high cost. Near infrared spectroscopy represents a non-destructive alternative that provides quick results. However, this method requires the development of calibration curves in order to be adopted for routine analyses. Calibration models are obtained through mathematical equations from the results of laboratory tests. This study aimed at developing calibration curves for pork, using 77 samples from swine carcasses of commercial hybrids. Samples of 0.20 cm thick were cut from the *Longissimus dorsi* muscle of the last rib in the caudal-cranial direction. After extraction, the samples were vacuum packed and transported to the laboratory. Were sub-samples were cut from the muscle. Each sub-samples had approximately 2.5 cm in diameter. Light reflectance analysis was performed, by CIEL\*a\*b\* system. The reflectance results are presented in three dimensions: L\* represents the lightness, a\* and b\* representing the saturation and hue. The color was determined 24 hours after slaughter. After cutting, the sample was exposed to air for a period of 15 to 20 minutes to allow oxygenation of the muscle. The same samples were analyzed in a near infrared spectrometer, FOSS NIR Analyzers XDS™, in the wavelength range of 400-2500 nm. Partial least squares (PLS) regression performed using the results of physicochemical analyzes as independent variables and the results of the infrared reflectance as dependent variables (predictors), using the software Unscrambler. Predictive ability of the models were evaluated through the coefficients of determination ( $R^2$ ). The accuracy of calibration models was high ( $R^2 = 0.86$ ) for a\*, indicating the validity of the method in the prediction of this parameter for assessing the quality of swine meat. The results obtained ( $R^2$ ) for L\* and b\* were 0.67 and 0.76, respectively. In conclusion, accuracy was satisfactory for the results of a\*. However further studies with increased numbers of animals are required for L\* and b\*, seeking to improve the validity of the method for predicting these parameters in swine meat.

Keywords: swine, meat, color, quality analysis, near infrared

Acknowledgment: The authors acknowledge CNPQ and Araucaria Foundation for financial support of the project.