

The Relationship between Pork Colour and Protein Solubility

Austin C. Murray and Michael Johns

AAFC, Lacombe Research Centre, 6000 C & E Trail, Lacombe, AB T4L 1W1;
Email: murraya@em.agr.ca

Instrumental measurement of meat colour (reflectance) is influenced by the type of illuminant and by the glossiness of the meat surface. The current study was conducted to determine the effect of illuminant type on the relationship of meat reflectance to protein solubility, a very good indicator of muscle quality.

Reflectance of the cross section of the longissimus muscle at the 5th rib was measured (n=220) with a Minolta CM 2002 spectral reflectance meter. Colour coordinates, L* (paleness), C (chroma) and H (hue angle) were obtained with each of four different standard illuminants (A-incandescent, D50-daylight, D65-daylight, C-overcast sky), as well as, with and without the inclusion of the specular component (that portion of reflectance due to the glossiness of the meat surface). Protein solubility was also assessed.

Muscles with low protein solubility (symptomatic of Pale Soft Exudative pork) gave higher, and muscles with the highest protein solubility (symptomatic of Dark Firm Dry pork) gave lower reflectance at all wavelengths measured (400-700 nm). Illuminant A gave the highest L* and chroma but lowest hue angle. The lower hue angle is significant, as it indicates that the meat appears redder under this illuminant. Inclusion of the specular component gave higher L* and lower hue angle than when it was excluded.

Correlation coefficients give an indication of the ability of colour coordinates to predict protein solubility. In comparison to other illuminants, illuminant A gave slightly higher correlations for L* and lower correlations for chroma. Correlations involving L* were higher with the specular component included.

Implications: Since illuminant A gives meat a redder appearance and since it is equal to or better than the other illuminants for the prediction of protein solubility from reflectance measurements, it appears to be the preferred illuminant for the instrumental evaluation of pork color. Choice of illuminant and inclusion of specular component affect the measure of color coordinates, and therefore care must be taken in the selection and specification of conditions for color measurement.