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New computer applications allow to classify Iberian pig meat automatically

This release is available in Spanish.

Fast identification of animal meat for human consumption is especially interesting as it is a guarantee of quality for consumers and producers. Consumption of Iberian pig meat is traditional in Spain as an exponent of good taste and maximum gastronomic quality. In the last years, a booming economic sector is growing around such animal species, already exceeding the Spanish borders: Iberian ham, dried meat, cold meats and cold cuts are already been exported all over the world.

Up to now, they had been using methods based on traditional processes like tasting and genetic assessment by means of molecular analysis methods to assess the quality and purity of Iberian pig meat and its possible contamination with other less-valuable breeds. Scientists of the University of Granada (departments of Pathological Anatomy and Chemical Engineering) have developed new techniques by combining technologies from different scientific and technical fields, which allow an immediate classification of Iberian pig meat, guaranteeing the quality of these products.

Different articles published in the "Journal of Food Engineering" and a doctoral thesis support the recognition of the new advances. More than four years of work have led to the reading of the thesis "New computer applications for the classification of Iberian pig meat by using morphometry and spectral reflectance", by Fernando García del Moral Martín, under the la direction of doctors Francisco O'Valle Ravassa and Leopoldo Martínez Nieto.

Combined techniques

The work has two essential areas. "First -García del Moral says-, we have addressed the "histological quantification by artificial vision of 6 animal species: White pig of the Large White hybrid breed, Iberian pig, lamb, cow of the Galician Blonde breed, Kobe ox and pigeon. The designed application permitted to quantify automatically the intramuscular connective tissue and the retraction of the muscular fibres in images taken by a system or artificial vision coupled to a microscopy". Second, the study has developed non-invasive techniques with a high analysis potential, such as spectral reflectance in the visible range and close infrared of the spectrum. They have worked with 30 porcine animals, 15 of white breed and 15 more of pure Iberian breed. They have carried out, in all of them, the quantification of the spectral reflectance on the masseter muscle of the animal's jawbone".

Thanks to the combination of spectral radiometry and artificial vision techniques conceived in this doctoral thesis, they have been able to design computer samples of neuronal networks which correctly classify the meat samples, in all cases, with a success rate over 97%.

Applied research work

The described work, both the thesis and the scientific papers, have been inserted in the project "Improvement of the Iberian pig meat's gastronomic quality: a textural, physical-chemical, histological and culinary study". The study is now at a more advanced stage which means the transference of research results to the productive sector. Actually, the project has been possible thanks to the support of the Technological Corporation of Andalusia, the Stock Cooperative Society Valle de los Pedroches (COVAP) and Bodegas Campos.

At present, they are carrying out a more advanced study with 66 Iberian pigs applying the above mentioned techniques in order to identify the genetic purity of the Iberian phenotype expressed in animals, as well as to improve the control, security and quality levels in the productive chain according to the "from the farm to the table" philosophy.

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