

MoniQA Network of Excellence

Towards harmonisation of analytical methods to monitor and control quality and safety in the food supply chain

Book of Abstracts

3rd MoniQA International Conference

"Food Safety and Consumer Protection"

27 - 29 September 2011, Varna, Bulgaria



SIXTH FRAMEWORK
PROGRAMME



www.monida.org

AUTHENTICATION OF TRADITIONAL GAME MEAT PRODUCTS BY THE USE OF SPECIES-SPECIFIC PCR

C.G. Santos^{1,2}, V.S. Melo^{1,2}, I. Mafra^{1,*}, J.S. Amaral^{1,2}, L. Estevinho², M.B.P.P. Oliveira¹

¹REQUIMTE, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, Portugal

²Polytechnic Institute of Bragança, Portugal *E-mail: isabel.mafra@ff.up.pt

Authenticity evaluation in meat products encompasses many issues, including the fraudulent substitution of higher commercial valued meats by cheaper meats and the presence of undeclared species. Due to its characteristic and intensive flavour and its healthier composition, game meats are considered as delicacy products and command higher prices compared to other meats, thus being susceptible targets for frauds.

The manufacture of traditional meat products is a long-established practice in the Northeast of Portugal, being "Alheiras" one of the most appreciated products. "Alheiras" are traditional smoked fermented sausages, mainly produced with pork and poultry meat in a mixture with bread and spices. Currently, game meat "Alheiras" are also available as very attractive meat products and prone to adulterations. To allow accurate information for consumers and avoid unfair competition among producers, it is important to develop efficient methodologies to assess meat species identification and verify the compliance with labelling.

This work aimed to develop analytical tools to assess authenticity of game meat "Alheiras", contributing to their valorisation. For this purpose, polymerase chain reaction (PCR) was the technique of choice for its specificity, fastness, accuracy and sensitivity. Meat species under study were game bird meat (partridge, pheasant and wild duck), chicken and turkey. Reference meat mixtures containing known amounts of each meat were prepared. DNA was extracted using the Wizard method. To specifically detect partridge (*Alectoris* spp.) and pheasant (*Phasianus colchicus*) species, specific primers targeting the mitochondrial 12S rRNA gene were used to obtain 141 bp and 113 bp DNA fragments (Rojas et al., 2009). To detect turkey (*Meleagris gallopavo*), chicken (*Gallus gallus*) and duck (*Anas platyrhynchos*), specific primers were designed targeting the *cytb* gene to amplify 144 bp, 129 bp and 111 bp fragments, respectively.

The results showed the specific PCR detection for all species until the level of 0.01% addition in pork meat, except for turkey (0.1%). The proposed techniques were successfully applied to 15 commercial samples of game meat "Alheiras". Partridge meat was detected in one out of 5 samples, while pheasant was not detected in none of the 2 samples labelled as containing partridge and pheasant, respectively. Among 7 samples declaring duck meat, its detection was verified only in 4. In opposition to these results, the detection of chicken was obtained in 13 samples, from which only 3 had this indication on the label, and turkey, which was declared in only one sample, was identified in 5 "Alheiras". These preliminary results suggest clearly the omission of the game meat species under study and the predominant presence of undeclared chicken and turkey for its replacement. The conclusions seem to indicate the misleading labelling of game meat "Alheiras" and the need to valorise and protect this kind of traditional products.

Keywords: Authentication; game meat; traditional sausages; species identification; PCR

References:

Rojas, M., González, I., Fajardo, V., Martín, I., Hernández, P.E., García, T., Martín, R. (2009). Food Control 20:896-902.

Acknowledgements: The authors are grateful for the financial support of "Reitoria da Universidade do Porto".