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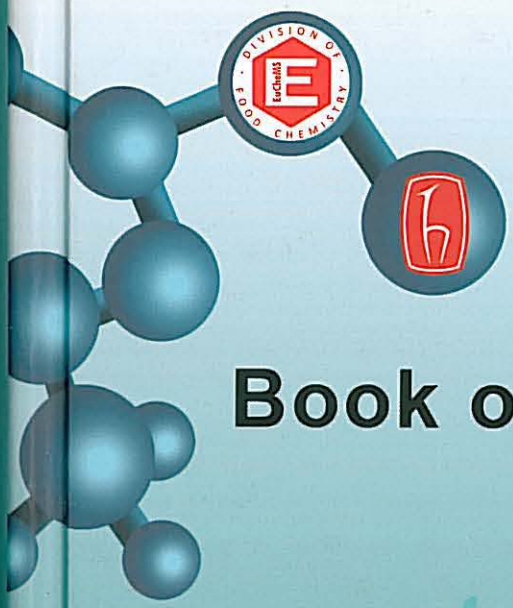

Book of Abstracts

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DETECTION OF ADULTERATIONS IN TRADITIONAL PORTUGUESE GAME MEAT PRODUCTS BY POLYMERASE CHAIN REACTION TECHNIQUE

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Authenticity assessment and fraud detection in processed meat products have been attracting an increased attention driven by public health, economic and legal concerns, and also for religious reasons. Currently, one of the major issues concerning adulterations in the meat industry regards the fraudulent substitution of higher commercial valued meat species by less expensive ones [1]. The manufacture of traditional meat products is a long-established practice in the Northeast of Portugal. One of the most appreciated products is called "Alheiras", which are traditional smoked fermented sausages, mainly produced with pork and poultry meat. In addition to the two Portuguese Alheiras with Protected Geographical Indication (PGI), other types of "Alheiras" are now available in the market, including the ones produced with game meat. Due to the game meat particular taste, intense flavour and seasonality, it generally commands higher prices compared to other meats [1]. Since game meat "Alheiras" should, totally or partially, include different types of game meat, they are particularly prone to fraudulent meat substitutions.

The aim of this work was to develop efficient methodologies to assess meat species identification to verify the labelling compliance and detect adulterations in this product. For this purpose DNA analysis coupled to polymerase chain reaction (PCR) was the technique of choice for its specificity, fastness, accuracy and sensitivity, associated to the high stability of DNA molecules to thermal processing used in "Alheiras" production. Specific primers, either obtained from the literature or particularly designed for this work [2], were used for the specific detection of game meat (deer, hare, pheasant, partridge, duck and rabbit) and other meats (pork, cow chicken and turkey). For each species, reference binary mixtures with known amounts (0.01% to 20.0%, w/w) of the considered meat in pork meat were prepared and used for method optimisation. PCR results revealed high sensitivity and specificity to detect the addition of all species down to 0.01%, with the exception of deer and turkey (0.1%). The proposed methods were successfully applied to 18 commercial samples of game meat "Alheiras", allowed to detect several adulterations, namely the absence of game species declared in the label and the presence of meat species not declared (mainly cow and poultry, and red deer in one sample). The obtained results indicate the occurrence of misleading labelling of game meat "Alheiras". Since this is considered a high-value traditional product that should be valorised and protected, inspection programs should be effectively put under practice to enforce regulation.

Keywords: authenticity; adulteration; polymerase chain reaction; game meat; traditional products

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[1] Fajardo et al., Trends in Food Science and Technology 21(2010) 408–421.

[2] Santos et al., Meat Science 90 (2012) 836–841.