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Development of a new method for the quantification of meat species in food samples

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The identification of meat species present in food samples is an essential step to verify the origin and traceability of raw materials used in production, as well as a necessary quality control for handling and cleaning processes. The methods developed to date are primarily based on the qualitative detection of meat species by PCR. The development of a real-time PCR quantitative method allows relative quantification of up to 0.05% of unique animal species compared to total animal material present in the sample. We have designed and validated real-time PCR methods for detection of beef, pork, equine, chicken, turkey, and poultry species. Species-specific mitochondrial DNA fragments are amplified using specific primers and TaqMan MGB detection probes. The percentage of each species in the sample can be calculated by performing two absolute quantifications: one to determine the amount of the species specific DNA and the other to determine the total amount of mitochondrial animal DNA present. A synthetic DNA plasmid containing the specific genomic regions of each species was used as a standard for quantitation. The detection limit, calculated using fresh meat, for each of the species is set at 0.01%. The relative quantification limit for each species is 0.05%. For processed samples, the detection and quantitation limits vary depending on the product processing method. Because the standard plasmid has the genomic target for all the species mentioned above, it is possible to simultaneously quantify multiple different species in the same sample by calculating against the amount of total animal DNA.

Biography

Ana M Hortigüela has completed her PhD in Biochemistry and Molecular Biology in the Autonomous University of Madrid. She has been working in several pharmaceutical companies, in R&D and in business development departments. Expert in genetics and real time PCR, she has participated as a speaker at numerous events nationally and internationally in the field of bacterial genetics and molecular diagnostics, and stayed at foreign institutions like the University of Hatfield in the UK and the Research Center Development and Roche in Penzberg (Germany).

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