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Development of direct ultrafast PCR assay for on-site detection of pork in meat mixtures

Mi-Ju Kim, Sung-Yeon Kim and **Hae-Yeong Kim**
Kyung Hee University, Korea

The relatively cheaper pork meat compared with meats such as beef and lamb could be adulterated for economic benefit. These food fraud incidents related to pork were concerned due to economic, religious and healthy reasons. In this study, ultra-fast PCR system based on a microfluidic chip was developed to identify pork meat in meat mixtures. Pork-specific primer targeting on mitochondrial D-loop region was selected and the size of PCR product was 83 bp. Specificity was evaluated using DNAs extracted from 15 animal species including pork. Pork-specific primer pair amplified specifically the targeted species with no cross-reactivity against different animal species. The sensitivity was tested by serial dilution of the pork DNA and beef-based pork meat mixtures. The limit of detection (LOD) was 0.01 ng for raw pork DNA and 0.1 % pork in a beef-meat mixture. The developed ultra-fast PCR assay showed high specificity and sensitivity in the detection of pork. The optimized ultra-fast PCR method can identify pork meat within less than 20 min without DNA extraction. Thus, this on-site detection method may provide as a rapid, sensitive, and efficient tool to authenticate pork meat in meat mixtures.

Biography

Mi-Ju Kim at present serves as an prominent faculty member at the Kyung Hee University, Korea.

mijukim79@gmail.com

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