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Bacterial detection of pasteurized meat carcasses after decontamination treatments:combination of cultivation-based and culture-independent methods to profile low numbers of microflora survival

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The diversity of microflora was determined to assess the effectiveness of decontamination treatments on pasteurized meat carcasses at a large meat packing plant in Canada. The main objectives were to characterize the bacterial diversity surviving in the heat-treated and DNase-Itreated samples over the untreated samples of pasteurized meat carcasses. Cultivation basedmethods were combined with nested PCR-DGGE fingerprinting methods to quantify low numbers of bacterial survival in each sample. Using the DGGE reference marker, seven genera (Pseudomonas, Staphylococcus Propionibacterium, Chryseobacterium, Flavobacterium, Ralstonia, Paenibacillus) were detected by both DGGE and cultivation-based method. Three species (Streptococcus salivarius, Micrococcus luteus and Leuconostoc mesenteroides) were exclusively found in pure cultures with cultivation-based method. Over fifteen genera were found by PCRDGGE using both the DGGE marker strains and bands in real samples, indicating the highest diversity determined by this technique. By contrast, the highest quantity of species was detected by cultivation-based method (29 and 88 in heat-treated and untreated samples, respectively). Five E.coli isolates in the family of Enterobacteriaceae were detected in untreated samples with plating methods demonstrating the usefulness of processing meat samples with decontamination and heat treatments. However, most of the unidentifiable species or genus by cultivation-based were almost detected by PCR-DGGE, confirming the effectiveness of combining both culture-dependent and independent methods to completely profile bacteria in food samples.

Biography:

Bassirou Ndoye has completed his PhD at Gemloux Agro Bio Tech, University of Liege, Belgium in 2007 and postdoctoral studies from the Institute on Nutrition and Functional Foods, Laval University in Quebec, Canada, in 2008-2010. He was then appointed as a visiting scientist at Agriculture and Agri-Food Canada, Lacombe Research Centre in Alberta, in 2011-2013. He was awarded the International Prize of Belgian Development Cooperation in 2008 for his doctoral thesis in industrial vinegar unit development in sub-saharan Africa. He is the head of the Department of Food Sciences and Technology at the University of Sine Saloum El Hadji Ibrahima Niass Senegal.