Prevalence of *Listeria* in milk and milk products in the Northern Region of Ghana based on different detection methods

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Abstract

Milk in Ghana is usually consumed raw or processed into various fermented and non-fermented dairy products. There is little information on the microbiological quality of the milk and its derived products either at farm level or on the market. Under certain conditions milk and its derived product may pose a health threat to consumers, especially when consumed raw. Therefore, it is important to investigate the quality and safety of milk and its derived products in order to ensure the safety of consumers and to derive the full economic benefits of the dairy industry in Ghana. The purpose of this study was to detect and determine the prevalence of *Listeria* species and *L. monocytonenes* in milk and milk products in northern Ghana using different selective culture media and PCR-based techniques. Prior to the collection of samples for bacteriological analysis, a questionnaire based survey was administered to 85 dairy farm owners and processors about management practice, milk production, milk and milk product marketing and processing. A total of 163 samples of milk and milk products were purchased from producers and vendors to examine the presence of *Listeria* spp. and *L. monocytogenes* by conventional isolation and PCR methods. The overall prevalence of *L. monocytogenes* was 6.7% (11/163) as confirmed by both colony and enrichment PCR methods. Among the studied samples of milk and milk products, soft cheese had the highest prevalence (33.3%) of *Listeria,* followed by raw milk (17.5%) and spontaneously fermented yoghurt (11.5%) being the least. *Listeria* spp. and *L. monocytogenes* were not detected in pasteurized milk on market, fried cheese and yoghurt with starter culture. The efficiencies of Oxford agar and palcam agar in this study were 91.1% and 87.7% respectively indicating that Oxford agar performed better than PALCAM agar in the detection of *Listeria* species. The enrichment PCR technique was efficient in detecting *Listeria* species than the colony PCR. In conclusion, this study reveals that consumption of raw milk, soft cheese and spontaneously fermented milk

could serve as potential risks of listeriosis in this region. The scenario warrants that milk is pasteurized and safety practices ensured during processing before consumption.