

Title Effect of sample preparation and bacterial concentration on *Salmonella enterica* detection in poultry meat using culture methods and PCR assaying of preenrichment broths

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Abstract

We evaluated the sensitivity of a PCR assay in the detection of *Salmonella enterica* at the broth preenrichment step of poultry meat. A total of 162 retail poultry meat samples, which were prepared by manual massaging, stomacher or no homogenization were compared for *Salmonella* recovery. Using these homogenization methods, the PCR assay at the broth preenrichment step detected *Salmonella* in, respectively, 48.9%, 62.2% and 50.0% of meat and giblet samples detected as *Salmonella*-positive using the culture method. In ground chicken, however, *Salmonella* was detected in 21.7% of samples treated by stomacher homogenization, compared to 40.7% and 48% of untreated and hand-massaged samples, respectively. These results suggest that stomaching of ground chicken causes excessive effusion of food constituents, which affects PCR results. Using the most probable number (MPN) technique, *Salmonella* was detected at under 1.0 CFU/g in 12 ground chicken samples and under 10^3 CFU/ml of broth in seven of the 12 broth-enriched samples, which considered the minimum concentration detectable by PCR assay. These results show that *Salmonella* detection using routine PCR assays is difficult in poultry meat, and in particular ground chicken, due to low amounts of *Salmonella* and the presence of inhibitors.