REAL-TIME PCR METHOD FOR DETECTION OF SALMONELLA SPP. IN ENVIRONMENTAL SAMPLES

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The methods currently used in FDA (Food and Drug Administration) field laboratories and other public health laboratories for detecting *Salmonella* in food/environmental samples require 2 days and have limited sensitivity. We describe the development and validation of a real-time PCR method that detected *Salmonella* and presence of group D in 24 h. Primers and probes specific to the invA gene of *Salmonella*, group D, and Enteritidis serovar were designed and evaluated for the inclusivity and exclusivity using a panel of 329 *Salmonella* isolates consisting 126 serovars from 32-O groups and 22 non-*Salmonella* environmental organisms. The invA-, group D- and Enteritidis-specific sets identified the isolates accurately. The PCR method was100% inclusive for *Salmonella* spp. and had a detection limit of 2 copies of *Salmonella* DNA per reaction. A Single-laboratory validation performed on 1,741 environmental samples demonstrated that the PCR method detected 55% more positives than the Vitek immunodiagnostic assay system method (VIDAS) method that is currently used. The method is more specific and did not report any false-negatives. The receiver operating characteristic (ROC) analysis documented excellent agreement between the results from the culture and PCR methods (area under the curve, 0.90; 95% confidence interval of 0.76 to 1.0) confirming the validity of the PCR method. The validated PCR method will help to strengthen public health efforts through rapid screening of *Salmonella* spp. in environmental samples.

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