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Temporal Characterization of Carrot Broth-enhanced Real-time PCR as an Alternative Means for Rapid Detection of *Streptococcus agalactiae* from Prenatal Anorectal/vaginal Screenings

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Results of this work were previously presented, in part, at the 110th General Meeting of the American Society for Microbiology, San Diego, Calif., 23 to 27 May 2010 [15].

ABSTRACT

Analysis of overnight carrot broth culture using the BD GeneOhm™ StrepB assay (carrot broth-enhanced PCR) yields increased sensitivity over carrot broth culture for detection of *Streptococcus agalactiae*. We investigated the prospect of reducing carrot broth incubation time prior to PCR performance. *In vitro* experimentation demonstrated that carrot broth-enhanced PCR nominally detected 10 CFU *S. agalactiae* after 4 hours of carrot broth incubation with competitive flora. Detection rates improved with inocula of 100 and 1000 CFU *S. agalactiae*, with the majority of these aliquots demonstrating detection after 2 hours of carrot broth incubation. Carrot broth was prospectively inoculated with clinical vaginal/anorectal swabs, with 500-μL aliquots collected. Early aliquots from 227 specimens were subjected to carrot broth-enhanced PCR (early-aliquot carrot broth-enhanced PCR) in instances of subsequent positive carrot broth culture or positive overnight clinical carrot broth-enhanced PCR. *S. agalactiae* detection rate by early-aliquot carrot broth-enhanced PCR (66.1%) exceeded that observed for 227 remnant swabs retrospectively tested by direct swab PCR (56.4%; $P = 0.03$). Early-aliquot carrot broth-enhanced PCR detection rate differences were most pronounced in aliquots from 83 carrot broths collected after six hours (84.3%) when compared to either direct swab PCR detection from these samples (51.8%; $P < 0.0002$) or early-aliquot carrot broth-enhanced PCR of 144 carrot broth aliquots collected after fewer than 6 hours of incubation (55.6%; $P < 0.0002$). Enhanced sensitivity of early-aliquot carrot broth-enhanced PCR versus direct swab PCR suggests that this assay could serve as a surrogate rapid detection method facilitating prevention of group B streptococcal disease.