Evaluation of sensitivity and specificity in combination of selective media and enrichment broth for Salmonella isolatio

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ABSTRACT

Salmonellae is one of the most common causes of human gastroenteritis. This study compared the performance of three selective media namely CAS (CHROMagar Salmonella medium), HE (Hektoen enteric agar) and XLD (Xylose lysine desoxycholate agar) and three enrichment broths namely GN (Gram-negative broth), SB (Selenite broth) and SBG (Selenite brilliant green sulfa enrichment broth) to optimize the use of plating media and enrichment broths for isolation of Salmonella spp. from human stools. The 304 stools were cultured onto the above three selective media by direct inoculation and after enrichment in GN and SB. The other 155 stools were tested for SBG and SB enrichment experiments. The standard biochemical identification tests and the serogrouping test were also used to identify Salmonella spp. The 109 Salmonella belong to 20 serotypes. The isolation rate of Salmonella is higher when stools were suspended in saline than plated on HE and XLD directly (42 isolates and 29 isolates, respectively). The sensitivity and specificity for direct plating were 53.5% and 87.6%, respectively, for XLD agar, and for CAS these values were 35.2% and 83.9%, respectively, and for HE these values were 40.9% and 81.5%, respectively. The sensitivities of XLD for direct plating was statistically significantly higher than CAS and HE The sensitivities for the detection of Salmonellae after GN enrichment were 45.1% and 52.1% for HE and XLD was statistically significantly higher than CAS 28.1%. The specificity for the detection of Salmonellae after GN enrichment on CAS, HE, XLD were not significantly different. XLD medium can be recommended for use for the isolation of Salmonella spp. with SB enrichment (sensitivity, 86.0%, specificity, 75.7%). The SB (66 isolates) enrichment procedure increased the number of Salmonella spp. isolates was significantly different from GN (45 isolates) and without enrichment (45 isolates) (p

Keywords : Salmonella, Xylose lysine desoxycholate agar, Hektoen enteric agar, CHROMagar Salmonella medium, Selenite brilliant green sulfa

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