

# Comparison of application of combination immunomagnetic separation and chromagar salmonella medium with conventional culture method for rapid isolation and detection of *Salmonella* in bovine diarrheic samples

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## Keywords

*Salmonella*; immunomagnetic separation; CHROMagar *Salmonella* medium

## Abstract

Various techniques and culture media were developed for rapid identification of *Salmonella* serovars. However, there are still problems with their sensitivity and specificity. In an attempt to reduce the time spent to obtain a result and to minimize the problems associated with rapid detection systems such as interference from food ingredients debris, micro flora in feces, and lack of sensitivity, there has been a lot of interest in the development of separation and concentration techniques prior to detection of pathogenic organisms. Various techniques have been utilized for this purpose including: filtration, centrifugation, and lectin-based biosorbents. However, the most successful of the approaches for separation and concentration of target organisms has been the use of Immunomagnetic Separation (IMS). This study was conducted with the objective of comparing the conventional microbiological methods to detect salmonella in diarrheic samples with Immunomagnetic separation combined with chromagar

salmonellae medium (IMS-CAS). Of the 400 fecal samples tested by the conventional microbiological and IMS-CAS methods, 33 (8.25%) was culture positive for *Salmonella* serotypes. The IMS-CAS method gave better results than the conventional microbiological method with less false-positive colonies. Sensitivities for the conventional microbiological method and the IMS-CAS were 100%. The specificity of the IMS-CAS method (99.73%) was significantly higher than that of the conventional microbiological method (94.55%). The use of plating IMS on CAS medium demonstrated high levels of sensitivity and specificity and reduced the time to final identification of *Salmonella* spp., resulting in substantial cost savings. It can be recommended for the primary isolation of *Salmonella* spp. from stool specimens.

## Abbreviations

CAS: CHROMagar *Salmonella*  
ELISA: Enzyme-Linked Immunosorbent Assay  
IMS; Immunomagnetic Separation  
Mac. Agar: Macconkey Agar  
PCR: Polymerase Chain Reaction  
TSI: Triple Sugar Iron  
XLD: Xylose Lysine Deoxycholate