P16

A Rapid Detection of Salmonella spp. using PBM BioSign Salmonella Kit and its Evaluation

J. Y. Lim, S. H. Kim, W. K. Bae, N. H. Kwon, J. Y. Kim, J. M. Kim, K. M. Noh, W. K. Jung, G. T. Park, and Y. H. Park

Department of Microbiology, College of Veterinary Medicine and School of Agricultural Biotechnology, Seoul National University, Seodoon-Dong 103, Kwonsun-Gu, Suwon, Gyunggi, 441-744, KOREA

Introduction

The detection and identification of Salmonella spp. is still troublesome and time consuming to the food industry. The PBMS test kit is a presumptive qualitative test that detects the presence of Salmonella spp. in food within 24h total testing time, allowing the user to release negative products 48h earlier than conventional methods (Existing US FDA Bacterial Analytical Manual).

Material and Method

PBM BioSign Salmonella (PBMS) test based on immunochromatographic method was evaluated for the detection of *Salmonella spp. in pure cultures as well as in 80 artificially contaminated food samples and in 20 naturally contaminated* food samples. A number of raw, fresh foods, processed foods and animal feeds were enriched in buffered peptone water, and after incubation, RV (Rappaport Vassidias) was used for selective enrichment. The enriched culture was applied to the PBMS detection kit, which allows the sample to flow laterally thorough a reagent zone containing anti-Salmonella antibodies conjugated to colloidal gold to precipitate. The result was determined as positive when visual line showed.

Results and Discussion

The PBMS test kit was evaluated on 10 different food types for Salmonella spp. and showed a limit of detection of 1-10 CFU (colony forming units)/25 g with a false-nagative rate of <5% and a false-positive rate of <5%. Also, there was no cross-reaction, especially to other gram-negative bacteria including E. coli, Citrobacter spp., Klebsiella spp., Shigella spp. and so on. The PBMS test kit for Salmonella spp. provides a rapid and inexpensive procedure for the detection of Salmonella antigens in food even when they are present at a low concentration (1-10 CFU/25 g).

Acknowledgements

This study was supported by Brain Korea 21 Project.

References

1. Bacteriological Analytical Manual. 8th ed. U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition.
2. Evaluation of culture enrichment procedures for use with Salmonella detection immunoassy. Huang H. et al. International Journal of Food Microbiology. 1999. Oct. 15;51(2-3):85-94.
3. Rapid enzyme-linked immunoassay for detection of Salmonella in food and feed products:perfomance testing organism. Bolton FJ et al. Journal of AOAC International. Mar-Apr;83(2):299-303.
4. Reveal for Salmonella Test System. Bird et al. Journal of AOAC International. 1999. Vol. 82. No. 3. 625- 633.
5. Salmonella-TEK, a rapid screening method for Salmonella species in food. Applied and Environmental Micorobiology. Van P. LS. 1990. Apr; 56(4):924-7.