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Isolation of *Salmonella* from Broiler Chicken Meat of Local Markets with Reference to Food Safety

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***Salmonella*, a common food-borne pathogen in human, was isolated from 15.24% of samples of broiler chicken meat collected from the local markets of the various locations at Namakkal of Tamilnadu. The isolates were confirmed by respective carbohydrate reactions and other tests. The *Salmonella* profile from all samples was found to be 2.30 ± 0.05. $\log_{10}$ cfu/g, which accentuates the risk of food poisoning if food hygiene is neglected.**

Key words: *Salmonella*, Broiler meat, Isolation, Microbial load, Food safety.

About 1.3 billion cases of gastroenteritis and 3 million deaths are reported worldwide due to *Salmonella* [Bhunia, 2008], which is higher than typhoid cases. A strong association has been demonstrated between the consumption of poultry products and sporadic outbreak of bacterial gastrointestinal disease caused by *Salmonella spp.* in human [McCrea *et al*., 2006]. The pathways for human exposure to pathogens in poultry meat and eggs are undercooking and cross-contamination [FAO/WHO, 2003]. In human disease, the clinical pattern of salmonellosis can be divided into four disease patterns namely enteric fever, gastroenteritis, bacteremia and other complications [Pui *et al*., 2011]. The present study was undertaken for the identification of *Salmonella* from broiler chicken, from various retail outlets of local areas, by culture together with their confirmation by different biochemical tests and the microbial load to ensure food safety was assessed.

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MATERIALS AND METHODS

A total of 210 chicken meat samples were collected under sterile conditions from four retail broiler meat outlets at Namakkal of Tamilnadu. From the samples *Salmonella* was isolated on Brilliant green agar (Hi-media, Mumbai). Five gram of chicken meat samples were taken aseptically and homogenized with 45 ml of normal saline, using sterile pestle and mortar to detain an initial dilution of 10^{-1}. Serial tenfold dilutions were made up to 10^{-6} in pre-sterilized tubes containing nine ml of 0.85 per cent normal saline. One ml of inoculum of each dilution was placed aseptically in identified petridishes. Twenty ml of molten and cooled (45°C) Plate count agar (PCA) agar was poured to each of the petridish containing inoculum and mixed thoroughly. After solidification of the medium, the petridishes were incubated at 37°C for 48 h. Pink colonies were counted and expressed as $\log_{10}$ cfu/g of sample, by multiplying the counted colonies with the reciprocal of the dilution. Respective biochemical and motility tests were carried out for the confirmation of *Salmonella.*

RESULTS

Thirty two broiler meat samples (15.24%) showed characteristic red colonies on Brilliant Green Agar (BGA). Microscopic examination of Gram's stained smears revealed Gram-negative rods. All the samples isolated were positive for motility test. By Triple sugar iron slant test, acid butt with colour change and alkaline slant were noticed. All isolates were oxidase negative and catalase positive. Further, biochemical reactions revealed glucose (-), lactose (+) maltose (-) and sucrose (+). The microbial load ($\log_{10}$ cfu/g) of the above broiler meat samples was 2.30 ± 0.05.

DISCUSSION

Salmonella could be identified from 15.24% of samples, however Dhawale *et al*. (2010) and Selvaraj (2010) reported a lesser overall prevalence of *Salmonella spp*. in wholedressed chicken carcasses as 5.5% and 4.90%, respectively. Colony characteristics of *Salmonella* were similar to the findings of Krautil and Tulloch (1987). The results of biochemical reactions and TSI test corroborated with the findings of Slavik *et al*. (1995) and Janss and Bolder (2000), respectively.

Salmonella count in the retail chicken meat markets was higher than that suggested by EU (2003) which recommends zero as permissible level. The incidence of salmonellosis outbreak cannot be neglected due to the overwhelming effects to human. Hence, food safety should be ensured by quick and thorough cooking of meat so as to destroy the microbes and their toxins thus rendering the cooked meat safe for human consumption**.** During preparation of these foods, management activities should focus on cross-contamination risks. Intervention strategies are hence important to control *Salmonella* from farm to fork.

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