



PREVALENCE OF SALMONELLA IN POULTRY MEAT AND POULTRY BASED PRODUCTS FROM VETERINARY HEALTH MARK (VHM) FOOD PROCESSING PLANTS IN CENTRAL REGION OF PENINSULAR MALAYSIA, 2010 - 2012

Marina, A.R., Ismail, M., Nurzia, I., Kasmah, S., Mohd Isa, B. and Mohd Fharok, Y.

Veterinary Public Health Laboratory, Department of Veterinary Services, Jln Nilai-Banting, Bandar Baru Salak Tinggi, 43900, Sepang, Selangor

ABSTRACT

This study reports the prevalence of *Salmonella* in poultry meat and poultry based products which were submitted by Department of Veterinary Services (DVS) Meat Inspectors from poultry processing plants situated in Central Region of Peninsular Malaysia to the Veterinary Public Health Laboratory (VPHL) for testing. A total of 2689 poultry meat and poultry based products were received from year 2010 to 2012. Samples liked chicken meat, nuggets, burgers and frankfurters were collected from 18 processing plant in four states of Peninsular Malaysia (Selangor, Negeri Sembilan, Melaka and Wilayah Persekutuan Kuala Lumpur). These processing plants are under the Veterinary Health Mark Scheme (VHM) certified by Department of Veterinary Services (DVS). This veterinary inspection and accreditation programme was developed in the 1980's to facilitate veterinary certification of animal and poultry products meant for export. Under this programme accredited plants were awarded the Veterinary Health Mark logo (VHM). *Salmonella* was detected from 5.4% (145) of the samples. *Salmonella Enteritidis* was the most frequent *Salmonella* serotype isolated from poultry meat and poultry based products. Other predominant *Salmonella* serotype identified were *Salmonella Albany* (19.3%), *Salmonella Typhimurium* (7.6%), *Salmonella Agona* (7.6%) and *Salmonella Corvallis* (6.9%). The percentage of samples with *Salmonella* detected decreased from 2010 (40 out of 549; 7.3% of positive samples) to 2011 (35 out of 711; 4.9%) to 2012 (60 out of 1429; 4.2%).

Keywords: *Salmonella*, prevalence, poultry meat, poultry based products, VHM processing plant

EXPERIMENTAL METHOD

Sample Collection

A total of 2689 samples of poultry meats and poultry products including burgers, frankfurters, nuggets and patties were collected by DVS Meat Inspectors. These samples were collected from 18 processing plants in 4 states of Malaysia (Selangor, Negeri Sembilan, Melaka and Wilayah Persekutuan Kuala Lumpur) from 2010 to 2012 based on National Food Safety Monitoring Programme and sent to Veterinary Public Health Laboratory for testing.

Isolation and Identification Of Salmonella

Isolation and detection of *Salmonella* from poultry and poultry products were done by a modified method of FSIS USDA Microbiology Laboratory Guidebook MLG 4.06 (2013). A 25 gram of sample was pre-enriched in 225 ml of Buffered Peptone Water (1:10 dilution) with incubation at 37°C for 18± 2 h, followed by enrichment in two selective liquid media (Rappaport Vassiliadis broth (41.5°C for 24± 3 h) and Muller-Kauffmann Tetrathionate broth (37°C for 24± 3 h). The inoculum was cultured on XLT4 Agar and Rambach Agar and incubated at 37° C for 24± 3 h. Presumptive *Salmonella* colonies were picked, purified, Gram stained and subjected to the following biochemical tests; triple sugar iron, lysine iron agar, ONPG, urease and indole production. *Salmonella* isolates were serotyped at the Veterinary Research Institute, Ipoh, Perak, Malaysia according to the Kauffmann and White Scheme (Grimont & Weill, 2007).

IMPORTANCE OF STUDY

- To determine the prevalence and serotypes of *Salmonella* in poultry processing plant in Central Region of Peninsular Malaysia
- To overview the effectiveness of the VHM accreditation scheme to ensure food safety in VHM poultry processing plants in the year 2010 to 2012

CONCLUSIONS

- The prevalence of *Salmonella* on poultry and poultry based products has declined from 2010 to 2012 under the inspection scheme of VHM
- The Veterinary Health Mark accreditation scheme is aimed at producing quality and safe animal products for public consumption in the country and also for export.

RESULTS AND DISCUSSIONS

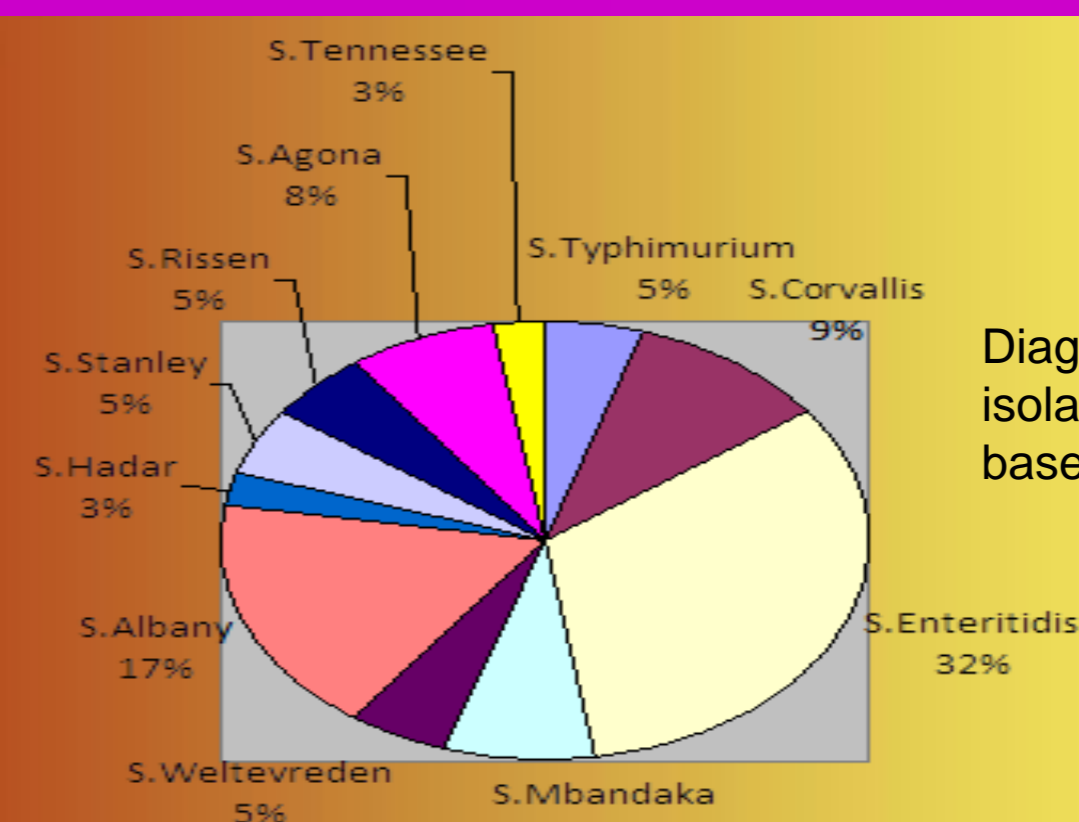


Diagram 1: *Salmonella* serotypes isolated from poultry meat and poultry based products 2010

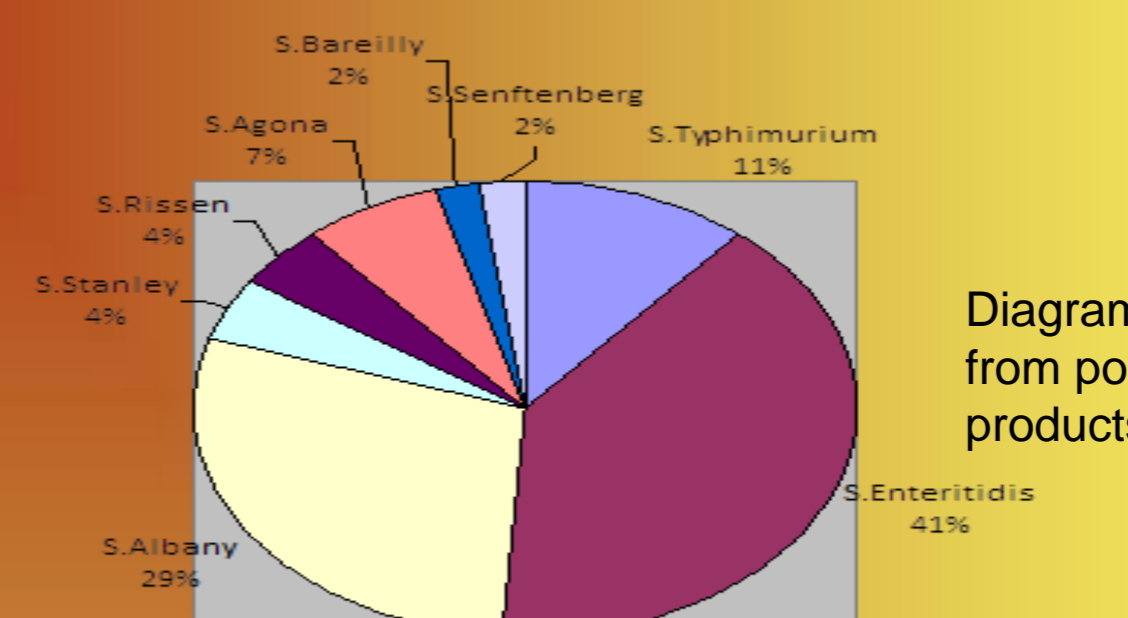


Diagram 2: *Salmonella* serotypes isolated from poultry meat and poultry based products 2011

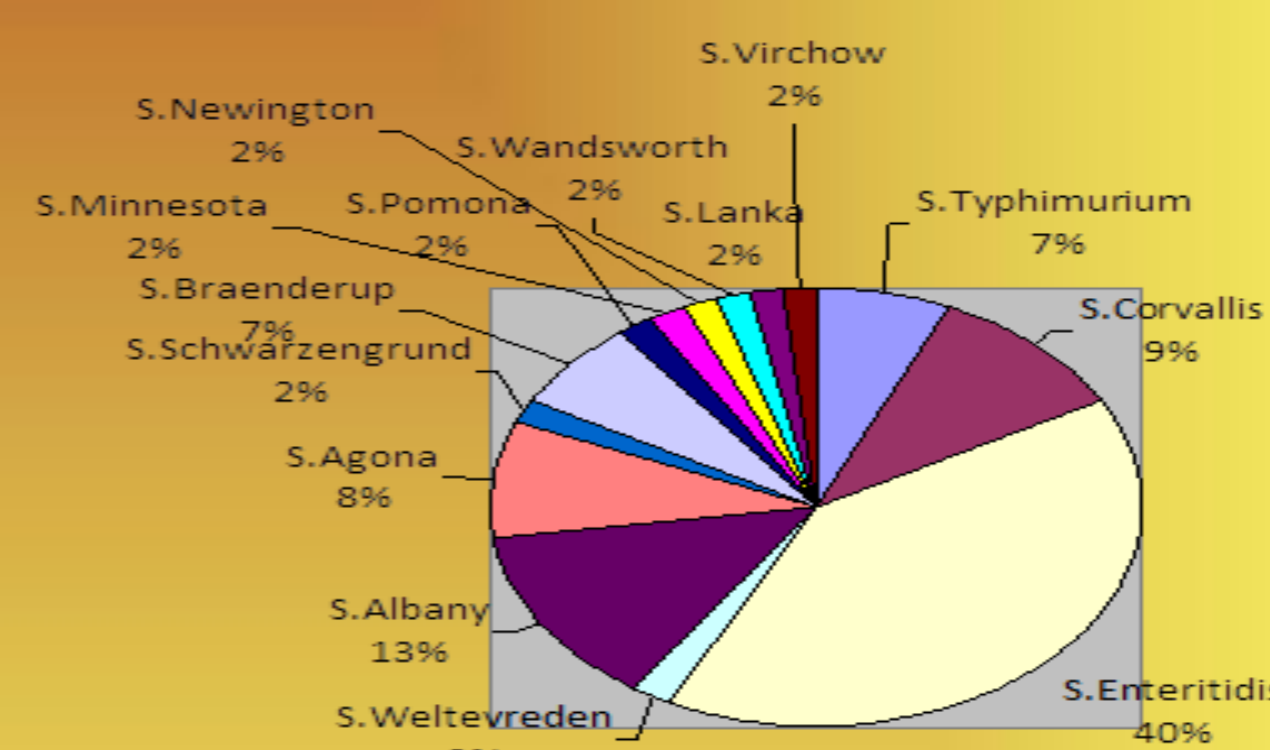


Diagram 3: *Salmonella* serotypes isolated from poultry meat and poultry based products 2012

- Of the total 2689 samples analyzed in 2010 to 2012, 145 (5.4%) were positive for *Salmonella* spp. at a detection limit of one colony-forming unit to 25 g (1 cfu/25g).
- Almost similar prevalence rate were observed among the *Salmonella* serotypes isolated in the year 2010, 2011 and 2012.
- The percentage of samples with *Salmonella* detected decreased from 2010 (40 out of 549; 7.3% of positive samples) to 2011 (35 out of 711; 4.9%) to 2012 (60 out of 1429; 4.2%).

ACKNOWLEDGEMENT

The authors gratefully acknowledge the Director General of Department of Veterinary Services Malaysia and Director of Veterinary Public Health Laboratory for their permission to participate and to present this paper at the 25th VAM Congress 2013

Researcher information



Marina binti Abdul Rahman,
Veterinary Public Health Laboratory,
Jln Nilai Banting, B.B. Salak Tinggi,
43900 Sepang, Selangor
Fax: 03-87068675 Tel: 03-87068681
Email: marina@dvs.gov.my