OCCURRENCE OF *SALMONELLA SP* IN POULTRY PROCESSING PLANTS IN THE STATE OF PARANA - SOUTHERN BRAZIL

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Background

An investigation was conducted to access the prevalence of *Salmonella* sp in broilers chickens in slaughterhouses in the State of Paraná, southern Brazil. Samples from 4802 broiler chickens were obtained and examined. *Salmonella* sp were isolated from 4.6% of them. The bacteria was found more often in some products than in others. It was shown that control measures in abattoirs and processing facilities are required to prevent cross contaminations of *Salmonella* sp between poultry carcasses and meat products.

Objectives

To access the prevalence of *Salmonella* sp in broiler chickens and in processed chicken products in slaughterhouses.

Methods

Samples were collected, wrapped in double-layered sterile plastic wrappings and stored in refrigerator for a maximum of 48 hours before analyzed. The samples analyzed consisted of poultry carcasses weighing 2000-2500 grams, equipment swabs and 25 grams samples of meat cuts from several parts and giblets. The carcasses were rinsed with 300 ml of 1% peptone tamponated water wich was incubated at 37°C during 12/24 h. The enrichment medium used was Rappaport Vassilis Medium at 42°C during 18/24 h. The selective plating used was the Agar Hectoen and Brilliant Green Agar at 37°C during 24 h, and the biochemical tests used were Triple Sugar Iron Agar, Urea Agar, Lysine Agar and Voges Proskauer.

Results and discussion

Salmonella sp was isolated most frequently from poultry meat cuts (40.8%); carcasses rinses (26.9%); equipment swabs (10.8%), giblets (11.2%); and mechanically deboned meat (10.3%).

Frazier (2000) states that *Salmonella* sp can be isolated from poultry carcasses in frequencies that may reach 50%. Poultry meat and other poultry products are implicated in one-third of all cases of salmonellosis outbreaks. Meat and eggs are the most important alimentary source of Salmonellas. The latest surveys carried out during 2001 demonstrated that *Salmonella enteritidis* still is the main serovar responsible for human food infections from poultry products.

Operations for industrial processing of broilers varies accordingly to the size of the birds processed, the processing speed, the kind of equipment utilized and the final commercial destination of the products. Salmonellas are frequently isolated from all edible parts of birds processed *in natura* in different phases of the processing and commercialization.

Brazil's M.A.P.A Regulation 72 states that when two samples are collected daily from a total number of 150,000 birds processed, a maximum number of 12 positive is admissible for every 51 samples analyzed. USDA-FSIS (1998) established the Salmonella Performance Standard for broilers which states that no more than 12 samples from a pool of 51 analyses should be positive, what represents a 20% Salmonella contamination tolerance. The *Codex Alimentarius* recommends total absence of Salmonella in 25 grams of product analyzed.

Table 1 – Incidence of *Salmonella* sp during the industrial processing of broiler carcasses

Products	Number of positive	Frequency (%)
Poultry carcasses	60	26.9
Poutry giblets	25	11.2
Poutry cuts	91	40.8
Mechanicaly deboned meat	23	10.3
Swabs	24	10.8
Total	223	100

Conclusions

The results showed that *Salmonella* sp were found more often at some products than at others during the processing , and the control measures in abattoirs and processing facilities are required to prevent cross contamination of poultry carcasses and other products. It´s concluded that to reduce Salmonela contamination of broiler carcasses, it is necessary both to minimize infections of broilers on poultry farm, and to optimize hygiene in slaughterhouses.

References

1) BRASIL. Ministério da Agricultura Pecuária e Abastecimento, Portaria S.D.A., nº 72 de 13.10.2002. Consulta Pública - que institui o Programa de Monitoramento de Salmonella sp em estabelecimentos de abate de aves.

2) EUROPA. European Community - 95/411/CE: Council Decision, Juni, 22, 1995 – " estabelece as regras relativas às análises microbiológicas por amostragem e efetivar em matéria de salmonelas, nas carnes frescas de aves de capoeiras destinadas à Finlândia e à Suécia. Journal Official n. L 243 de 11/10/1995 p. 0029 ~ 0032.

3) Frazier, W.C., Westhof, D.C., Microbiologia de los Alimentos. Mc Graw-Hill, New York, USA, 2000, p. 500, 561.

4) I.C.M.S.F.(International Commission on Microbiological Specification for Foods)–Ecologia Microbiana de los Alimentos e Productos Alimenticios 1-Factores que afectam la supervivencia de los microrganismos en los alimentos. Acribia A.S.Zaragoza-Espanã, 1985, 419,437. 5) Silva, E.N., Duarte, A .: 2002. Salmonella Enteritidis em Aves: Retrospectiva no Brasil. Revista Brasileira de Ciência Avícola . Agosto de 2002, v.4, nº2,085-100.

6) U.S.D.A. (United States Department of Agriculture) F.S.I.S. (Food Safety and Inspection Service); 1998; Washington, DC, USA.

7) Uyttendaelle-MR; Debevere-JM; Lips-Rm; Neyts-KD. Prevalence of Salmonella in poultry carcasses and their products in Belgium. International Journal of Food Microbiology; 40, 1-8, 1998.

8) Wichmann-Schauer-H; Ellerbroek-L, Delbeck-F; Forster-F; Fries-R, Haarmann-M, Helmut-R, Methner-U. Occurrence of Salmonella in German poultry and poultry meat. II. Large sized broiler farms and broiler slaughterhouses. 2001, Fleischwirtschaft-; 81 (6), 83-87.