

## PREVALENCE OF *SALMONELLA* SPP. IN POULTRY MEAT

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### Background

It is estimated that every year approximately 1.34 million people suffer from salmonellosis in the United States, only Norwalk virus and *Campylobacter* spp. are responsible for more cases of foodborne infection. In Germany 46% of all cases of "enteritis infectiosa" notified to the authorities are caused by *Salmonella*. Foodstuffs often incriminated with outbreaks of salmonellosis are e.g. raw meat, eggs and poultry meat. The aim of this study was therefore to examine the prevalence of *Salmonella* spp. in samples of frozen poultry meat from different European countries.

### Material and Methods

In this study during February 2000 to March 2001 a total of 2886 samples of frozen poultry meat from France, Germany, Italy, Spain, The Netherlands and Portugal was examined for the prevalence of *Salmonella* spp. using classical culturing detection as well as the RFLP-PCR technique. Cultural detection was done according to the standard protocol described in ISO 6579.

For the RFLP-PCR 25g of the samples were incubated in 225 ml of buffered peptone water for 24h at 37°C. Afterwards DNA was isolated and used for thermal cycling using the primers described by AABO et al. (1995).

All *Salmonella* isolates were further tested for their sensitivity towards various antibiotics (ampicilline, kanamycine, ciprofloxacin, tetracycline, trimethoprim, sulfamethoxazole, nalidixic acid, erythromycine).

### Results

Of the 2886 samples examined 453 samples (15.7%) were found to be contaminated with *Salmonella*. The prevalence of *Salmonella* spp. differed from country to country (Tab. 1). Samples from Germany and The Netherlands showed a higher contamination rate in the months November and December.

Of all *Salmonella* isolates 199 were characterized as *S. enteritidis* (43.9%), 112 isolates as *S. hadar* (24.7%), 78 isolates as *S. typhimurium* (17.2%) and 64 isolates belonged to other *Salmonella* spp.

Whereas in samples of German poultry meat *S. enteritidis* was found most often, *S. hadar* was the most common subspecies isolated from samples of Southern European origin. *S. typhimurium* DT 104 was found in approximately 42% of poultry meat samples with French origin (Tab. 2).

108 isolates (23.8%) showed resistance towards three of the tested antimicrobial substances, 179 isolates (19.9%) were resistant to four antibiotics and 49 isolates (10.8%) were insensitive to five substances. Eight isolates (*S. hadar* and *S. typhimurium*) turned out to be insensitive towards all of the tested eight antimicrobials.

### Discussion

Our study shows that frozen poultry meat is still heavily contaminated with *Salmonella*, therefore consumers should take special care in preparing poultry meat and be aware of the risks associated with it. In Germany *S. typhimurium* gains more importance whereas *S. enteritidis* PT4 loses importance.

The growing number of isolates resistant to various antimicrobial substances should be carefully monitored.

### References

AABO, S., ANDERSEN, J.K., OLSEN, J.E., 1995, Lett. Appl. Microbiol. 21, 180-182

### Data

Tab. 1: Prevalence of *Salmonella* spp. in frozen poultry meat

GERMANY		FRANCE	
samples	<i>Salmonella</i> -positive	samples	<i>Salmonella</i> -positive
641	126 (19.7%)	422	76 (18%)

**Tab. 2:** Differentiation of the *Salmonella* isolates

GERMANY		FRANCE	
serovar	number	serovar	number
<i>S. enteritidis</i>	47 (37.7%)	<i>S. enteritidis</i>	25 (32.9%)
<i>S. typhimurium</i>	22 (17.5%)	<i>S. typhimurium</i>	32 (42.1%)
<i>S. hadar</i>	29 (23.05%)	<i>S. hadar</i>	13 (17.1%)
others	28 (22.02%)	others	6 (7.8%)