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## Salmonella contamination of UK-produced shell eggs on retail sale

Thursday, 18 March 2004

Food Survey Information Sheet 50/04

### Executive Summary

The FSA's survey of salmonella contamination of UK-produced shell eggs on retail sale was carried out over a period of 5 months, between March and July 2003.

The main objective was to establish the prevalence of salmonella contamination in these eggs and whether this had changed since the previous retail survey conducted in England in 1995/96.

A total of 4753 samples (mostly boxes) of six eggs were purchased from a representative cross-section of retail outlets throughout the UK and the shell and contents tested for salmonella contamination.

In terms of different production types of eggs, 50% were from caged production, 16.9% were from free-range systems, 16.6% were from organic systems, and 16.5% were from barn systems.

The overall UK finding was that nine samples (0.34%) were contaminated with salmonella, which is equivalent to approximately one in every 290 "boxes" of six eggs.

In the last major survey, conducted in 1995/96, the eggs were sampled in England only.

On this occasion eggs were sampled from all four countries in the UK.

If the findings from the current survey are compared on an England only basis then there has been a threefold reduction in the level of salmonella contamination since 1995/96 and this is likely to reflect the measures introduced by the UK egg industry to control salmonella.

Factors that might have influenced whether or not eggs were contaminated with salmonella were also examined.

However, where differences were found these tended to be small and much larger sample sizes would have been required to demonstrate a statistically significant difference.

There was no statistically significant difference between the prevalence of salmonella contamination in samples purchased in England, Scotland, Wales or Northern Ireland; or between the prevalence of salmonella contamination in samples from different egg production types; or between non-Lion code eggs and Lion code eggs; or between eggs that were stored chilled or at ambient temperature.

However, there was a statistically significant higher prevalence of salmonella contamination of eggs from medium sized retailers\* than large retail outlets.

Of the nine isolates from salmonella-positive samples, seven (78%) were *S. Enteritidis* and of these, three were *S. Enteritidis*M phage type 4 (PT4).

There were also single isolates of *S. Infantis* and *S. Livingstone*. All of the salmonella isolates were fully sensitive to ten antimicrobial agents and none of the three *S. Enteritidis* PT4 isolates corresponded to known vaccine strains.

*Salmonella Infantis*, *S. Livingstone* and *S. Enteritidis* PTs 4, 6 and 12 were found in previous egg surveys.

In addition to the nine salmonella positive samples there were a further 5 egg samples which were reported as positive for *S. Dublin*.

This was an unusual and unexpected finding and on further investigation there appeared to be no evidence to support this finding in laying flocks.

Whilst it is not possible to provide a definitive explanation for the *S. Dublin* findings, it is most likely to have resulted from cross-contamination during the handling and testing of eggs.

The Agency considers that there is sufficient doubt about the validity of the *S. Dublin* findings to justify excluding them from the main analysis.

The interpretation of the main findings from the statistical analysis remain the same with or without the inclusion of the *S. Dublin* findings.

All salmonella positive samples were from egg shells.

Comparison with the 1995/96 survey indicated that the prevalence of *S. Enteritidis* PT4, which is most commonly associated with eggs and human illness, in samples of six eggs have fallen sharply from 0.58% of samples to 0.11% in 2003.

It is not unusual for salmonella to be present in the environment and therefore not surprising that a few isolates were found from egg shells.

The small number of positive samples points towards random contamination from the production environment rather than any systemic contamination from infected flocks.

\*independent/local shops

**50/04 Egg survey - report**

Read the full report (pdf file 398kb)

**50/04 Egg survey - report annexes**

Read the annexes to the report (pdf file 417KB)

**50/04 Egg survey - results**

Read the data tables (Excel spreadsheet 1.4Mb)

**FSA survey shows very low level of salmonella contamination of eggs**

Read the full press release and notes to editors

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