

# A survey of antimicrobial resistant (AMR) *E. coli*, *Campylobacter* and *Salmonella* on chicken and turkey meat on retail sale in the UK (2022)

Area of research interest: [Antimicrobial resistance](#)

Study duration: 2022-01-24

Planned completion: 31 March 2023

Project status: Completed

Project code: FS430917

Conducted by: HallMark Meat Hygiene Ltd and Animal and Plant Health Agency (APHA)

Date published: 20 November 2023

DOI: <https://doi.org/10.46756/sci.fsa.jmu560>

## Background

The FSA is continuing to commission projects to improve our understanding of the role the food chain plays in the development and spread of AMR bacteria. Our AMR surveillance programme has been established for several years, with a particular focus on retail meats.

From 2015 to 2020, FSA had been participating in the EU-harmonised survey on AMR *E. coli* in retail meats. This survey has generated AMR prevalence data, over several years, in beef, pork and chicken meat collected at retail in the UK. The survey confirmed that chicken, and to a lesser extent, beef and pork can be contaminated with AMR *E. coli*.

Whilst it is no longer mandatory for Great Britain to carry out the EU survey following the UK's exit from the EU, it is important that we continue with the monitoring of AMR in retail meats and aligning our surveillance to the EU surveys will allow comparison of AMR data.

We have therefore commissioned an AMR survey in chicken and turkey meat collected at retail sale in the UK from January to December 2022. This has been identified as a surveillance priority to fill evidence gaps, provide continued monitoring for *E. coli* and *Campylobacter* as well as a baseline for *Salmonella* surveillance in this area.

## Approach

The FSA have commissioned an AMR survey in chicken and turkey meat collected at retail sale in the UK from January to December 2022. The sampling methodology and analytical methods will mirror the EU specification as much as possible to ensure comparability of data with the previous AMR data from the EU survey and that from Member States.

This survey will involve collecting 300 chicken and 300 turkey meat samples on retail sale in the UK from January to December 2022, with sampling representing 80% retail market share and 80% population coverage of the four UK countries. Analysis will require initial isolation and enrichment of *E. coli* from all meat samples, prior to testing for AMR, specifically Extended Spectrum Beta Lactamases (ESBLs), AmpC and Carbapenemase-producing *E. coli*. Analysis for colistin resistance and the colistin resistant *mcr* genes will also be included, as well as testing for

AMR Campylobacter and Salmonella.

This survey will provide continued monitoring for E. coli and Campylobacter as well as produce new baseline prevalence data on AMR Salmonella in chicken and turkey meat sold at retail in the UK. This will help to determine if these meats pose a risk to public health in relation to AMR and allow future monitoring of trends over time. This new data will inform the [UK AMR National Action Plan](#), the FSA AMR surveillance strategy, risk assessments and consumer advice.

## Results

- The prevalence of ESBL/AmpC E. coli in chicken and turkey meat was 12% for both chicken and turkey. Mcr-1 colistin resistant E. coli was detected in 1% of chicken and turkey samples.
- The prevalence of Campylobacter in chicken was 48% but much lower in turkey (5%). High levels of Campylobacter (>1000 cfu/g) were detected in only 6% of chicken but not in turkey samples examined. Ciprofloxacin and tetracycline resistance was common in chicken and turkey Campylobacter isolates.
- The prevalence of Salmonellas was very low in chicken (2%) and turkey (<1%). None of the Salmonellas were resistant to ESBLs or Carbapenemase. Whilst E. coli, Campylobacter, Salmonella and AMR was detected in chicken and turkey samples, it should be noted that these are raw meat intended to be cooked. Thorough cooking will destroy any microorganisms present including those that are AMR and therefore reduce the risk to consumers. Good hygiene practices are in place to minimise the risk and spread of AMR bacteria in particular when handling raw meat.

## Conclusion

The risk of acquiring AMR related infections through the handling and consumption of contaminated meat is **very low** providing that good hygiene and cooking practices are followed. This advice also applies to meat contaminated with Salmonella and/or Campylobacter.

PDF

[View FS430917 Surveillance of AMR in E. coli, Campylobacter and Salmonella on raw fresh chicken and turkey.pdf as PDF\(Open in a new window\)](#) (1.89 MB)