ABSTRACT

Bacterial pathogenic agents producing beta-lactamases with extended spectrum in livestock production chains.

The aim of this Project was to carry out a study on the try meat production chain, in order to investigate on the presence of bacterial agents (Enterobacteriaceae, in particular Escherichia coli) resistant to Extended-spectrum cephalosporins (ESC-R), typically producing ESBL or AmpC-like enzymes, and estimate their prevalence in a given poultry production.

The Project was focused on broiler chicken meat industry, in order to gather preliminary information at the end of the production chain, as near to the consumer's level as possible.

Between 2011 and 2012, a cross-sectional study has been conducted on ESC-R, ESBL- or AmpC-producing E. coli in broiler chicken meats (e. g. refrigerated un-skinned carcases/meat portions, including wrapped or vacuum-wrapped products etc.)

Samples were randomly taken at retai,l especially in Central Italy: however they were representative of n=87 different farms from n=11 regions and n=30 provinces (where >90% of the Italian broiler chickens are bred). The batches had been slaughtered in n=27 different national abattoirs.

At laboratory level, isolation was attempted by means of both "selective" and "non-selective" cultures, conducted in parallel on the same samples, after a common pre-enrichment step.

Isolates obtained were submitted to identification and subsequent antimicrobial susceptibility testing by microbroth dilution method in a 96-well plate towards a panel of EU-level consensus dilutions of selected antimicrobials.

Molecular identification and characterization of the genes encoding for the phenotypes of resistance of interest was performed by microarrays and by a set of international consensus Polymerase Chain Reaction assays and sequencing procedures.

The study demonstrated the presence and a very high prevalence (97,70%) of ESC-R E. coli in chicken meat at retail, when using selective methods.

The vast majority of ESC-R isolates harboured ESBL genes belonging to the CTX-M (cefotaximase) family.

Details of the study are reported in the I risultati sono riportati nella Tabella 1 AST e ESBL_AmpC e Tabella 2 Carat. genetica enclosed as an Tabella risultati RC IZSLT 02_11.xls (Allegato 1) .