

Prevalence of Antimicrobial Resistant *E. coli* in poultry from various PDN's of Gujarat

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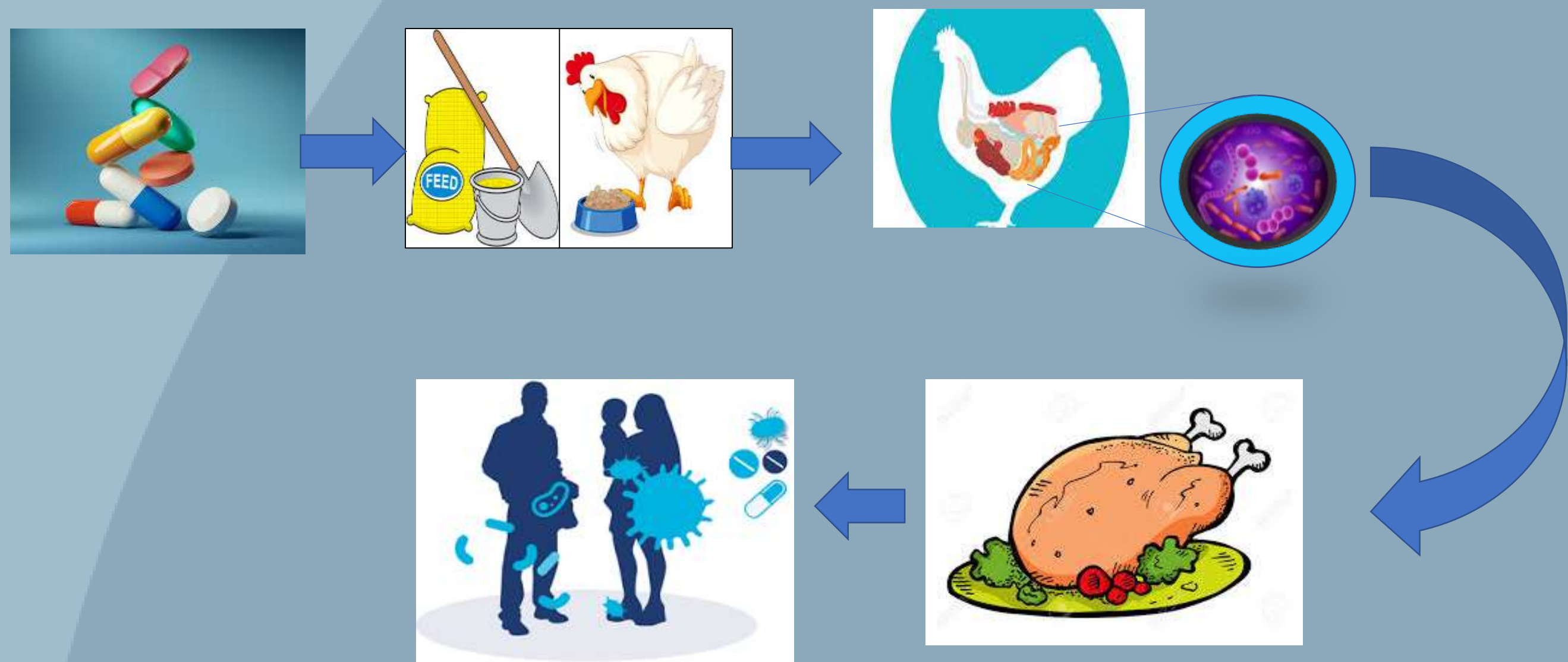
No action today no cure tomorrow!

High time to understand where outpaces of miracles of science the 'wonder drugs' are turning into disservice to human due to their excessive use.



Introduction

Unquestionably, antibiotics have become the premier solution to many infectious diseases; however, the recent emergence of antimicrobial resistance (AMR) in the field of veterinary medicine and humans have become a significant public health concern worldwide. United Kingdom Research Innovation (UKRI) under Global Challenges Research Fund (GCRF) has focused on poultry, the largest subsets of the crossing point where pathogen spillovers and AMR are recurrently reported. Food animals, especially poultry as well as poultry houses, serve as a principle pool of *E. coli* and thus a potential source of human illness. Here we determined the prevalence of antimicrobial resistance in *E. coli* isolated from broiler and desi chicken collected from farms and live bird shops respectively. Antibiotic susceptibility test was performed by disc diffusion method to understand the resistance profile of *E. coli* among 8 cities of Gujarat.



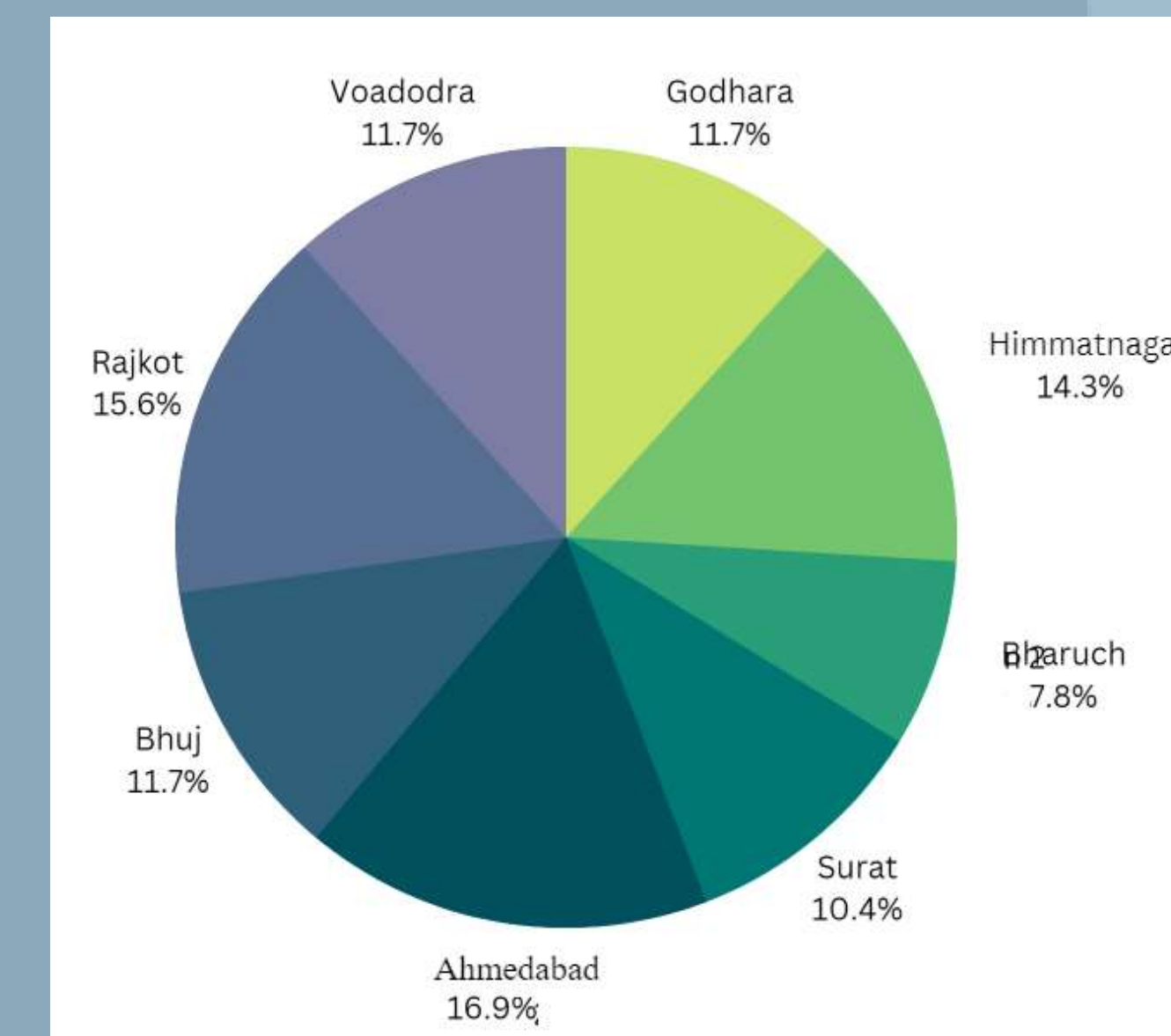
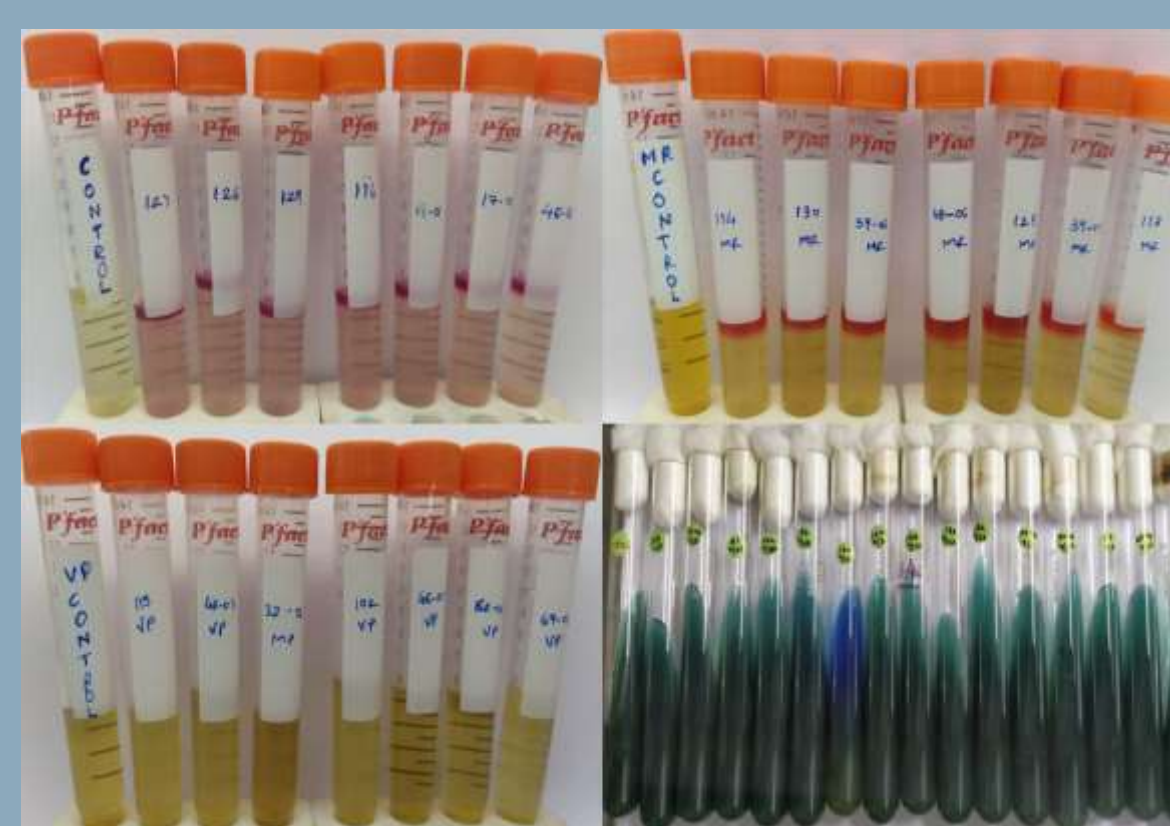
Objectives

The present study was carried out to determine the prevalence and AMR profile of *Escherichia coli* isolated from broiler chickens and desi chickens from selected farms and shops of Gujarat. This study also aimed to identify the risk factors associated with multidrug-resistant (MDR) *E. coli* infection in broiler and desi chickens.

Results

In biochemical characterization and molecular characterization, approximately 50.65% samples showed positive results for *E. coli*. In our study out of 10 antimicrobial classes, highest resistance (100%) was observed against glycopeptide, penicillin and macrolide class of antibiotics followed by quinolone (85.90%), trimethoprim (83.87%), phenicol (80.65%), beta-lactum (73.80%), aminoglycoside (69.90%) and colistin (68%).

Indole Test	Methyl Red Test	Voges-Proskauer Test	Citrate Test
Positive	Positive	Negative	Negative



Method

- The sterile swabs were collected from chicken cloacae and stored at 4 °C during transportation. In total, 150 chicken cloacae samples were collected from 50 poultry farms and 50 live bird shops mainly for broiler and desi chicken.
- Antibiotic Susceptibility Test (AST) was performed using 34 antibiotics comprising 10 antimicrobial classes by disc diffusion method and observing the zone of inhibition (in mm).

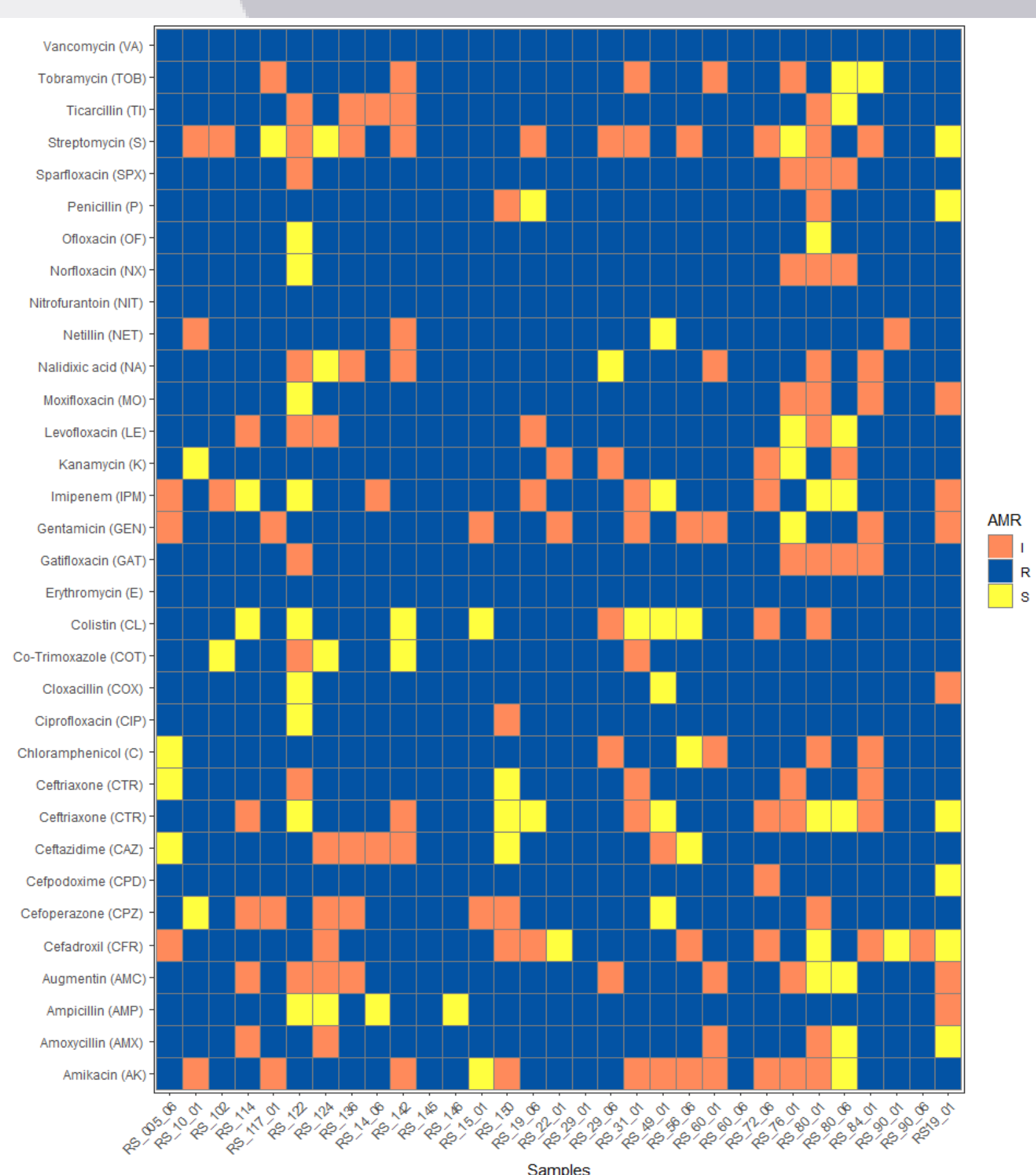
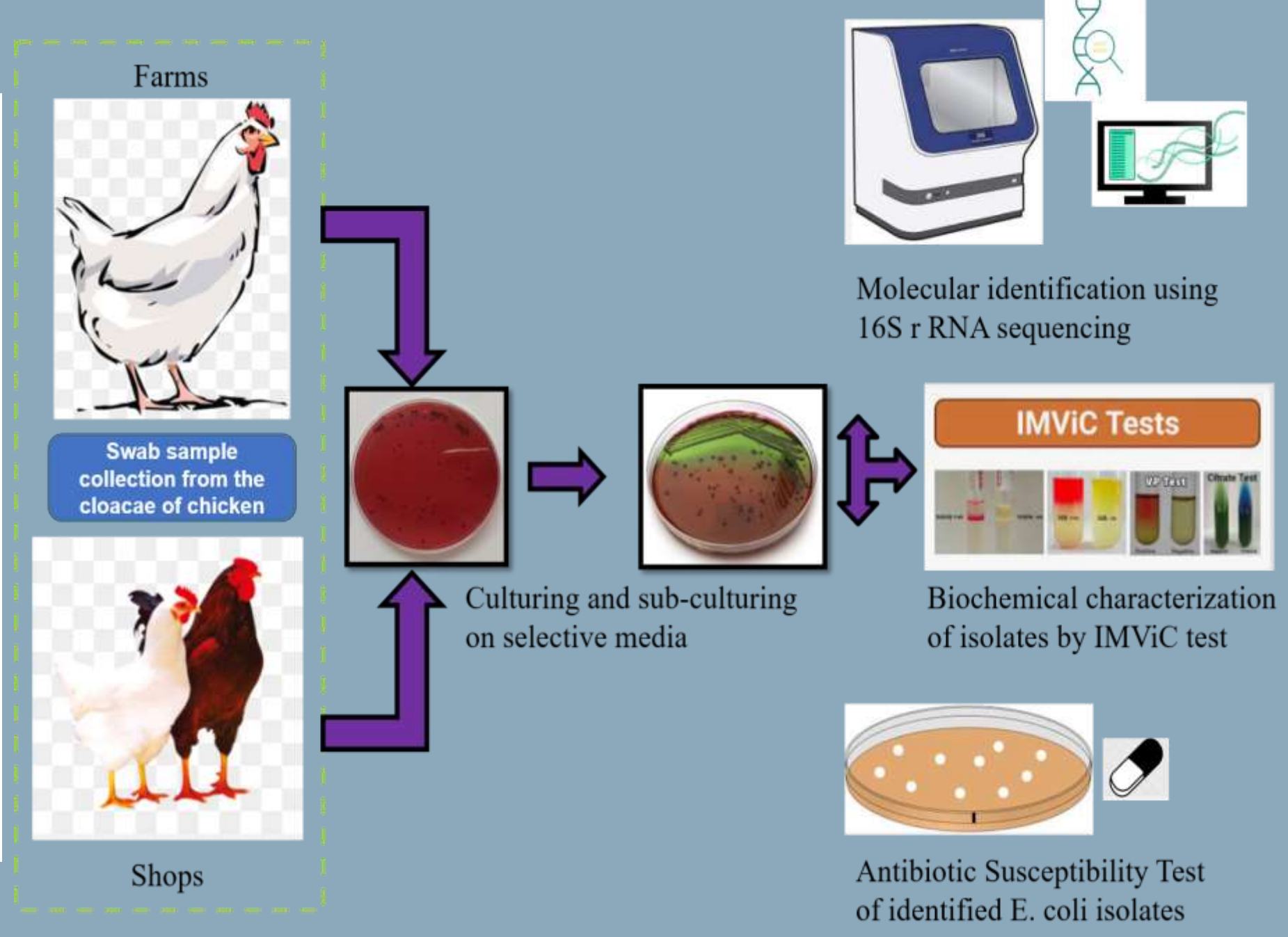
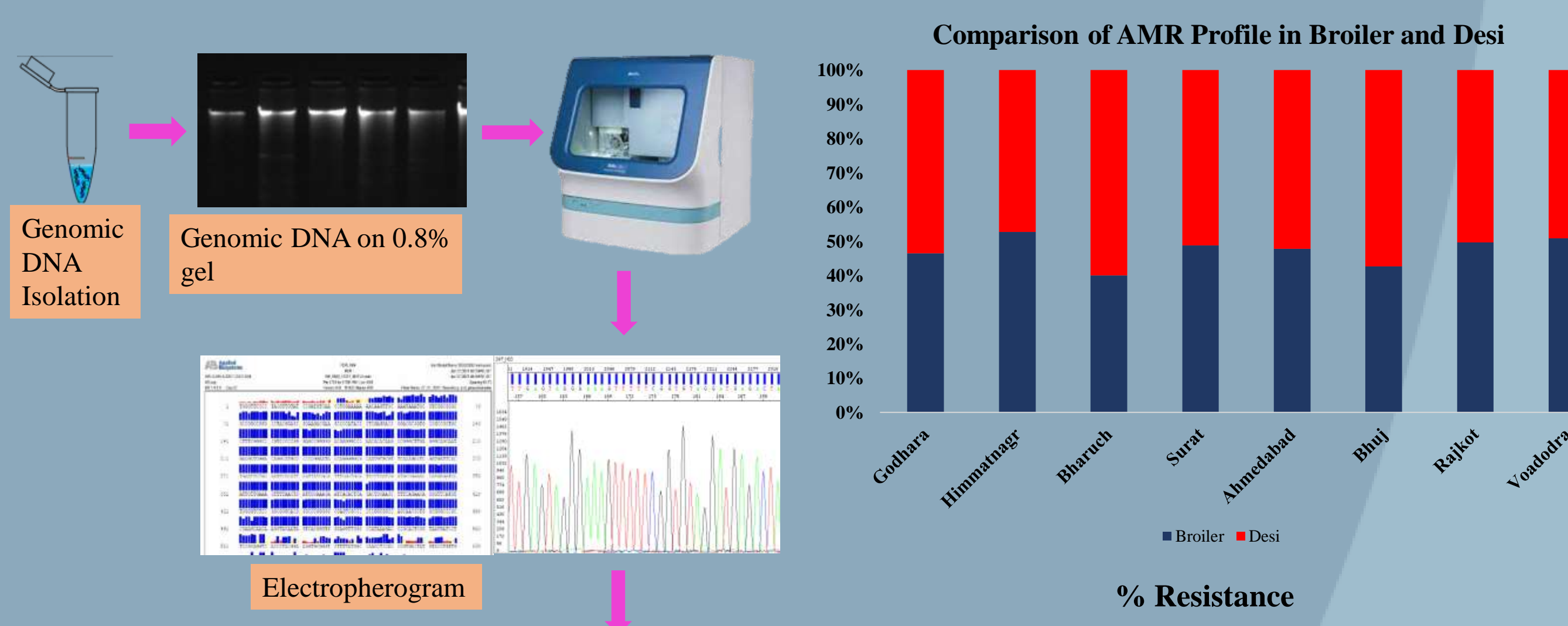


Fig1. Heatmap illustrating resistance, susceptibility and intermediate results obtained for 34 antibiotics.
Fig2. Disc diffusion demonstrating inhibition zones



Sample ID	Culture Identification	Sample ID	Culture Identification
RS 102	<i>Escherichia coli</i>	RS 22-01	<i>Escherichia coli</i>
RS 122	<i>Escherichia coli</i>	RS 49-01	<i>Escherichia coli</i>
RS 145	<i>Escherichia coli</i>	RS 58-06	<i>Escherichia coli</i>
RS 106	<i>Escherichia coli</i>	RS 81-06	<i>Escherichia coli</i>

Identified *E. coli* isolates

Discussion

The presence of MDR *E. coli* in healthy chicken will be a serious health issue to consumers. The resistance genes may transfer via plasmids and cause resistance spread in other pathogens and commensals. In the absence of urgent corrective and protective actions, the world is heading towards a post-antibiotic era, in which many common infections will no longer have a cure and, once again, kill unabated. There is a need to restrict the antibiotics usage in livestock and poultry.



This is an example. Use a free web tool such as qrcode monkey to generate a QR code.



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UK Research and Innovation



GCRF Global Challenges Research Fund