Occurrence and antimicrobial resistance in zoonotic food-borne bacterial pathogens isolated from broiler farms and live bird shops in Tamil Nadu, India

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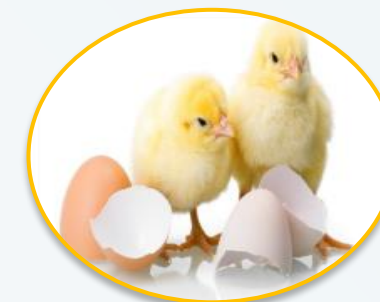[3]Department of Veterinary Microbiology, Madras Veterinary College, Chennai – 600 007, Tamil Nadu, India.
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Introduction

❖ Poultry is one of the most widespread types of meat food industries worldwide

❖ India ranks 3rd in egg production and 6th in chicken meat production in the world.

❖ In 2023, the consumption of poultry meat in India was over four million metric tons.

❖ Bacterial infections have traditionally and preferentially been controlled by the use of a large diversity of antimicrobials.

❖ The emergence of antimicrobial resistance (AMR) in bacteria from global animal production results in severe risks of ineffective antimicrobials and veterinary treatment failure.

❖ AMR in zoonotic food-borne pathogens is likely to threaten human.

❖ Monitoring the AMR profiles necessary for optimizing effective antimicrobial treatments in poultry and following up the development of bacterial drug resistance.

Objectives

❖To study the occurrence and antimicrobial resistance in zoonotic food-borne bacterial pathogens isolated from broiler farms and live bird shops (birds and environment) in Tamil Nadu, India
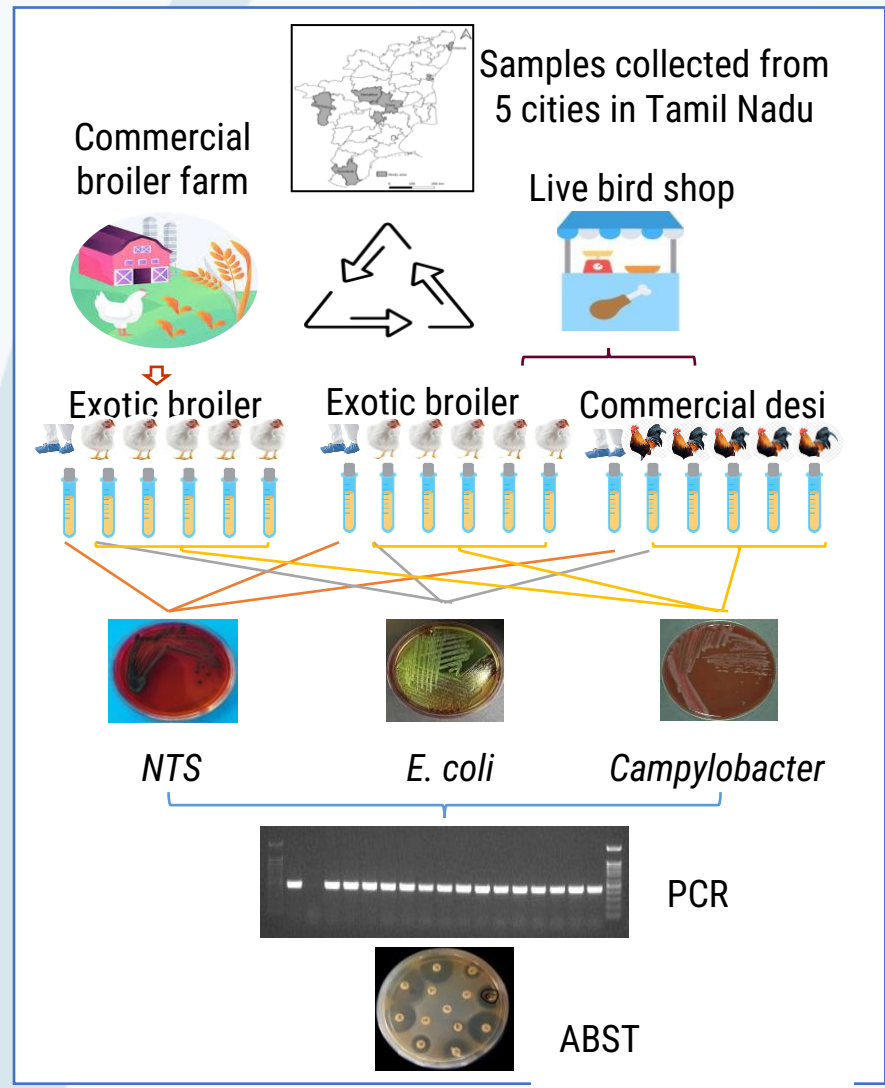
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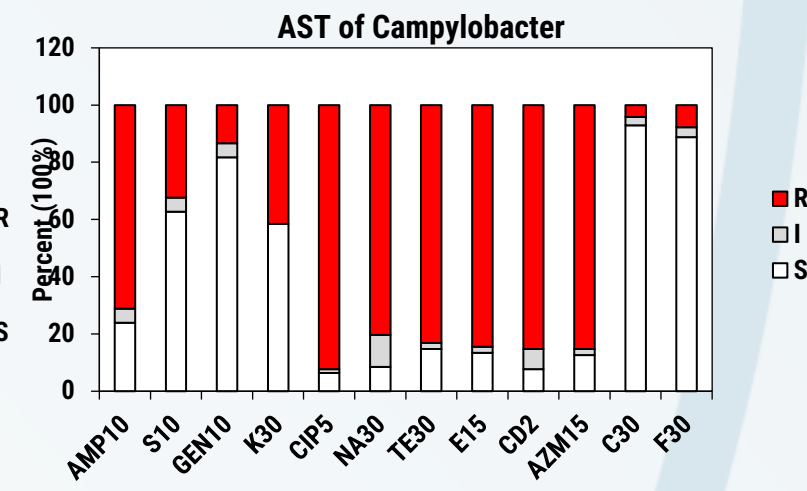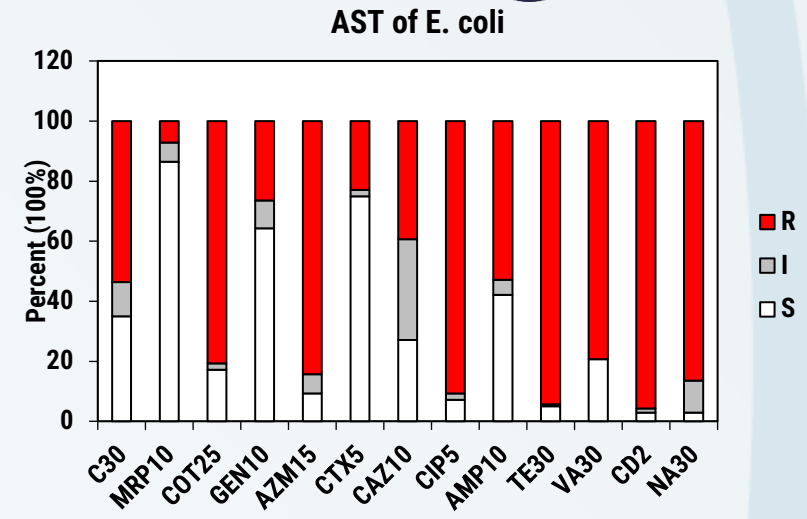
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Methods

Samples collected from 5 cities in Tamil Nadu

Commercial broiler farm

Live bird shop

Exotic broiler — Exotic broiler — Commercial desi

NTS — E. coli — Campylobacter

PCR

ABST

Results

Occurrence of food borne pathogens

- E. coli — 93.3
- NTS — 42.6
- Campylobacter — 32

AST of E. coli

Percent (100%) vs C30, MRP10, COT25, GEN10, AZM15, CTX5, CAZ10, CIP5, AMP10, TE30, VA30, CD2, NA30

Legend: R, I, S

AST of NTS

Percent (100%) vs C30, MRP10, COT25, GEN10, AZM15, CTX5, CAZ10, CIP5, AMP10, TE30, VA30, CD2, NA30

Legend: R, I, S

AST of Campylobacter

Percent (100%) vs AMP10, S10, GEN10, K30, CIP5, NA30, TE30, E15, CD2, AZM15, C30, F30

Legend: R, I, S

Final meeting and conference
New Delhi, India
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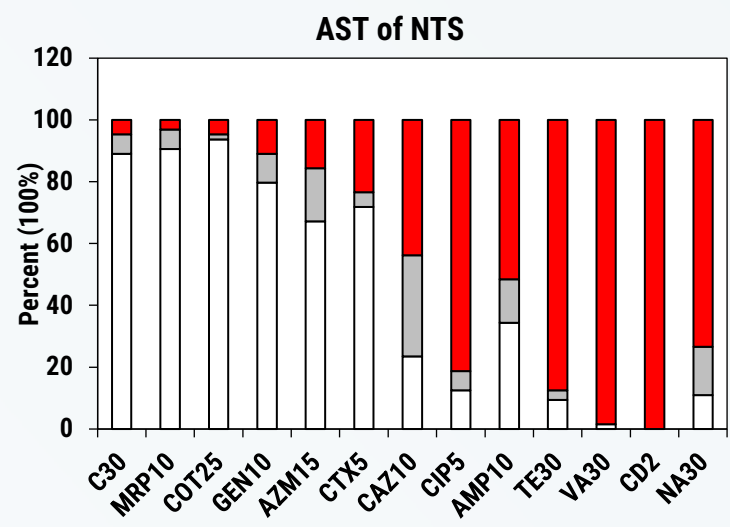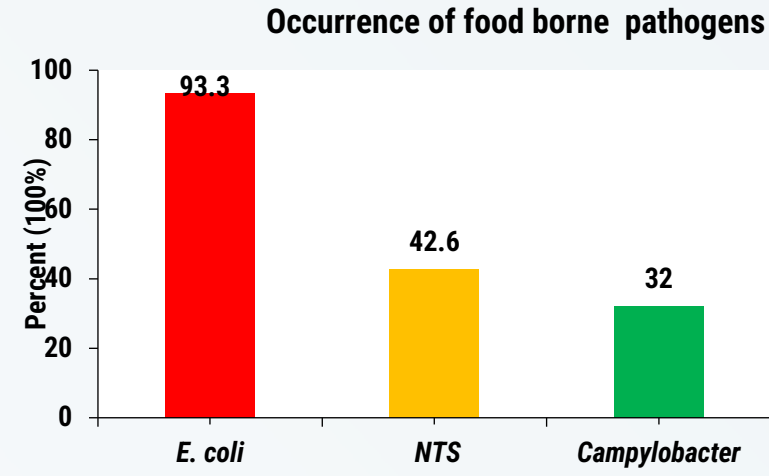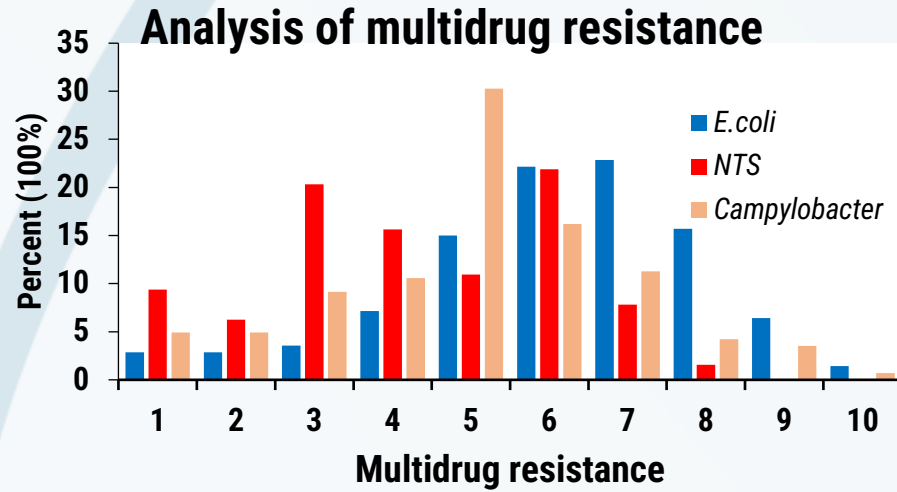
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Analysis of multidrug resistance

Results

❖ The occurrence of *E. coli*, *Non – Typhoidal Salmonella* and *Campylobacter*, found to be 93.3%, 42.6% and 32% respectively.

❖ *E.coli* showed high resistance rate to Clindamycin (95.7%), followed by Tetracycline (94.3%), Ciprofloxacin (90.7%), Nalidixic Acid (86.4%), Azithromycin (84.3%), Co-Trimoxazole (80.7%), Vancomycin (79.3%) and Ampicillin (52.9%).

❖ NTS showed high resistance to Clindamycin (100%), Vancomycin (98.4%), Tetracycline (87.5%), Ciprofloxacin (81.3%), Nalidixic Acid (73.4%) and Ampicillin (51.6%).

❖ In case of *Campylobacter* the resistance rate was Ciprofloxacin (92.3%), Azithromycin (85.2%), Clindamycin (85.2%), Erythromycin (84.5%), Tetracycline (83.1%), Nalidixic Acid (80.3%) and Ampicillin (71.1%).

❖ The isolates E.*coli* (100%), *NTS* (93.75%) and *Campylobacter* (95.7%) were not susceptible to at least 3 antimicrobial drugs.
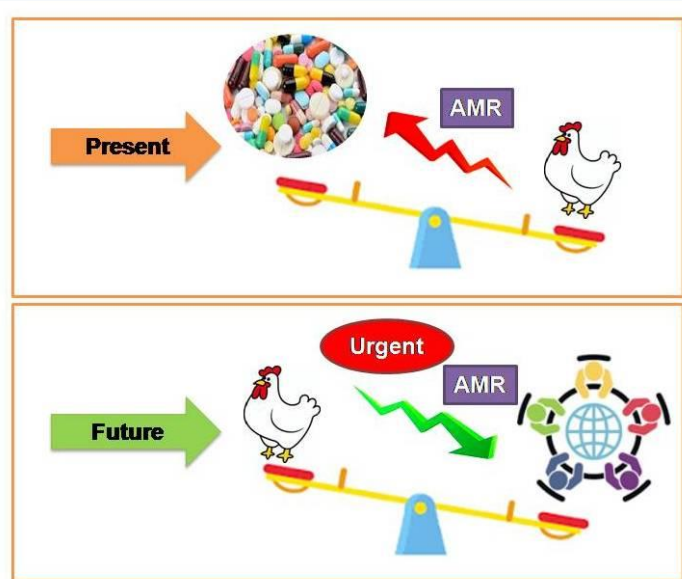
Conclusion

Our results highlight that, irrational usage of antibiotics in farms leads to development of antimicrobial resistance (AMR). Further policy engagement strategies needed to prevent and control food-borne bacterial pathogens in poultry.

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