

1. Presence of Colistin-Resistant Bacteria of Food Origin in the gut is cause for worry

Prelims Syllabus: Science and Technology - Medicine and Pharmaceuticals

Mains Syllabus: GS-III Awareness in the fields of IT, Space, Computers, Robotics, Nano-Technology, Bio-Technology and Issues Relating to Intellectual Property Rights.

Why in News?

- Recently, a new study has found that the origin and spread of Colistin resistant bacteria in human gut is majorly on account of Poultry.

What is Colistin?

- Colistin is a last-resort anti-biotic that is commonly used for treating gram negative infections in humans like Pneumonia, meningitis and other infections caused by E.coli etc
- Besides, use of Colistin is rampant in poultry where it is used as growth promoter and for disease prevention. (Tylosin is another antibiotic used as growth promoter)

Colistin-Resistance in Bacteria:

- Recently it has been found that bacterial strain Klebsiella pneumonia that lives in human gut has developed resistance to colistin.
- The origin of colistin-resistance in human gut Bacteria Includes
 - Hospitals**
 - Food**
- Poultry consumption
- Vegetables that contains Colistin-resistant Klebsiella bacteria:
 - ✓ This is because poultry litter is used as manure for growing vegetables.
 - ✓ Colistin-resistant bacteria of hospital origin do not respond to any of the antibiotics, including carbapenem while colistin-resistant bacteria of food origin will respond to carbapenem.

How resistance is Spread?

- The mutation in the mgrB gene confers colistin resistance to Klebsiella bacteria.
- Besides in 3% of the cases colistin-resistance in Klebsiella bacteria is due to mutation in mcr gene.

Significance of the Study:

- So far it was believed that the mutation in the mgrB gene or other chromosomal genes are the reason behind colistin resistance in Klebsiella bacteria.
- Till date, there is no evidence to suggest that the mgrB gene mutation spreads from food to human Klebsiella bacteria.
- But this study has found mgrB gene mutation in food Klebsiella bacteria. This shows that mgrB gene mutation also spreads from food to human Klebsiella bacteria.

