



The world is struggling to deal with antibiotic resistance emanating from the large-scale use of antibiotics in animals. This is largely because the regulatory mechanisms put in place by most countries (including the agency that sets global food standards, Codex Alimentarius Commission) are not designed to control antibiotic resistance; they are designed to reduce the level of antibiotics in food products. However, there is a tenuous link between antibiotics in food and antibiotic resistance in bacteria because of antibiotic overuse in animals.

The current regulations on antibiotics in food are based on the concept of Maximum Residue Limits (MRLs), or the maximum amount of chemical permissible in a food item. It is based on the toxicity of the chemical—the more toxic is a chemical, the lower residues are allowed. But many times, MRLs are based on how much residue can be practically reduced in food item based on good practices. In most cases, it is a compromise between toxicity (health) and agricultural practices, including industry interests (wealth).

Take the case of Codex standards for oxytetracycline antibiotic in chicken. The MRL is 200 µg/kg for chicken muscle; 600 µg/kg for liver; and 1,200 µg/kg for kidney. The standards for liver and kidney are higher than for muscles because antibiotics are more likely to persist in liver and kidney than in muscles. There is also a toxicity angle to these different standards. Since people eat more chicken muscle than liver or kidney, even a higher standard for liver or kidney means less exposure to antibiotics. This is a classic example of how standards are a compromise between health goals and industry interests.

But the question is what is the relationship between eating a piece of chicken with 200 µg/kg oxytetracycline and the resistance of a bacteria to the antibiotic. The answer is, very little. The only plausible relationship is that eating chicken with residues of oxytetracycline is like taking the antibiotic in small doses. This might make microbes in the body resistant. But this is a tenuous argument because the MRL of 200 µg/kg is set not on the basis of antibiotic resistance but on the basis of toxicity of oxytetracycline, and there is no link between toxicity and resistance. So, just by setting standards for antibiotics in food items, we will not be able to solve the resistance issue, because the problem is elsewhere.

The biggest problem is the emergence of resistant bacteria in animals and its transmission through food and environment. A 2011 study by National Antimicrobial Resistance Monitoring System (NARMS) of US found that over half of the samples of ground turkey, pork chops and ground beef collected from supermarkets were tainted with antibiotic resistant bacteria like *Salmonella*, *E. coli* and *Campylobacter*. Consumption of these products, especially in raw form, are the most important route through which antibiotic resistant bacteria move from animals to humans. They can also transmit to humans through air, water and soil and through direct contact with affected animals and their meat. The bottom line is, till the time we keep misusing antibiotics in animals we will not be able to solve the problem of antibiotic resistance. So what should we do?

Firstly, we need to learn from other parts of the world on what has worked and what has not. Countries that have relied on voluntary regulations and on setting standards of antibiotics in food, like the US, have not been able to control antibiotic resistance. On the other hand, countries that have tried to reduce the use of antibiotics, like Scandinavian countries, have had success. This

means India's priority should be to put systems in place to reduce the use of antibiotics in poultry. This requires a holistic approach (see 'Way ahead').

Keeping antibiotics effective is essential for the public health. We cannot afford to squander this essential public good in pursuit of profits. This is the bottom line.

### Way Ahead

- Ban the use of antibiotics for growth promotion and mass disease prevention. It should only be used to cure the sick animals based on prescription of veterinarians
- Antibiotics should not be allowed in feed and feed supplement. The government should set standards for animal feed and regulate the business
- Antibiotics that are critical for humans should not be allowed for use in animals
- Encourage development, production and use of alternative antibiotic-free growth promoters, such as herbal supplements
- Ensure that a licensed antibiotic reaches a registered user through a registered distributor or stockist of veterinary medicines. All animal antibiotics should be traceable from manufacturing site to user. Implement stringent control on import of antibiotics and feed supplements
- Good farm management practices should be followed to control infection and stress among the flock. Biosecurity guidelines of the Central Poultry Development Organisation should be improved and applied to all farms. Capacity of small farmers must be enhanced so that they can comply with the guidelines. The guidelines should be legally enforced on big companies
- Set standards for antibiotics in chicken
- Set pollution standards and install pollution control systems to limit transfer of resistant bacteria, antibiotics from poultry to environment
- Veterinarians should be trained and educated on judicious use of antibiotics and infection prevention. The government should ensure that veterinarians do not get incentives for prescribing more antibiotics
- There is a need to introduce a labeling system wherein poultry raised without use of antibiotics should be labelled through reliable certified schemes to facilitate consumer choice. Poultry produced with antibiotics must also be labeled accordingly. This would incentivise the farmer who can charge a premium and provide consumer with a healthy choice
- Lack of data on the use of antibiotics and drug resistance is a major problem in India. It is necessary to create an integrated surveillance system to monitor antibiotics use and antibiotics resistance trends in humans, animals and food chain. A national-level database should be developed and kept in the public domain.

### 'Declaration on Antibiotic Resistance' by the Antibiotic Resistance Coalition

In May 2014, the Antibiotic Resistance Coalition (ARC), comprising global civil society organisations and stakeholders issued a 'Declaration on Antibiotic Resistance' and called upon WHO member states to pass a critical resolution that would spark concerted global action to control the escalating antimicrobial resistance crisis.<sup>1</sup> The coalition specified actions that are required to be taken by national governments and international institutions. It asserts that effective antibiotics are a finite resource and a global, essential public good and that consumer protection and public health must not be subordinated by governments and international institutions to the pursuit of profit. Among others, it called for tackling excessive non-human use in food and agriculture and prohibiting animal use of antibiotics that are critically important for humans and regulatory measures and practices that prevent spread of antibiotic resistant genes through soil, water and air.

## References

1. Antibiotic Resistance Coalition, declaration. [http://cseindia.org/userfiles/arc\\_declaration.pdf](http://cseindia.org/userfiles/arc_declaration.pdf)