Can Chicken Make You Immune to Antibiotics?

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Chicken is the most common type of poultry in the world. A report published in the Times of India, dated 31st July says that eating chicken may make us immune to antibiotics.¹ A study by The Centre for Science and Environment (CSE), a non-governmental organization, New Delhi has revealed the presence of five antibiotics in 40% of 70 chickens tested from Delhi and national capital region.² Three tissues namely, muscle, kidneys and liver in each sample were tested by the CSE. They conducted the test in their Pollution Monitoring Laboratory.³

Residues of antibiotics were observed in all three tissues of the samples in the range of 3.37 to 131.75 micrograms per kg.

Antibiotics enter the food chain of chicken through the use of antibiotics by the poultry industry. Several antibiotics are in use for treating poultry birds i.e., amprol, bacitracin, sulmet, penncillor etc.⁴

The broiler chicken is especially bred for meat. Broiler strains are mostly hybrid crosses between Cornish White, New Hampshire and White Plymouth Rock.⁵ It has been found that when byproduct of antibiotic production(dried Streptomyces aureofaciens etc.)are fed to poultry animals, it helps in better growth. These byproducts of antibiotic production contain high level of vitamin B₁₂ and trace amount of antibiotics that are believed to accelerate growth of the chicken.²

Antibiotics are also called anti-bacterial. They are the substances that can destroy and stop the growth of micro-organisms. Antibiotics are widely used for the prevention and treatment of infectious diseases. They are used therapeutically for the protection of human and animal
Antibiotics are divided into different sub-groups such as fluoroquinolones, tetracyclines, aminoglycosides, $\beta$-lactams, macrolides, amphenicol, etc.$^{[6]}$

Antibiotic use is related to emergence of resistant bacteria in the animal which later transmits to human through food, environment and direct contact with the affected meat. Remains of antimicrobial compounds also have been found in foods of animal origin as a result of inappropriate or excessive usage of these compounds in poultry farming. These residues are known to Bioaccumulate which get transferred to humans through food and environment.$^{[7]}$

Regular exposure to certain specific antibiotic at a low dose induces resistance to that particular antibiotic, i.e., that particular antibiotic does not work for the bacteria an individual is invaded by ,because that bacterial strain has evolved resistance to that particular antibiotic,which it has already encountered at low level in the host body. And that man becomes antibiotic resistant. Antibiotic resistance occurs when antibiotics no longer work against disease-causing bacteria.$^{[8]}$

Actually the question of antibiotic resistance arose from the fact that it is being observed in villagers by doctors from different parts of the country. And this ultimately compelled the research team of CSE to conduct investigation regarding the presence of antibiotics in human food chain.Dr, Devi Shetty, famous heart surgeon had asked the research team of CSE to check the food sources for presence of antibiotics. CSE had earlier reported in 2002, antibiotic resistance in humans for two antibiotics widely used for therapeutic purpose. They were ciprofloxacin and doxycycline. At the same time they had tested and reported presence of those two antibiotics in high level in chicken samples $^{3}$. 

The man, who suggested addition of antibiotics into animal feed, was the biochemist, Thomas H. Jukes. He had reported with his team that addition of small amount of antibiotics in poultry feed could enhance the growth rate of the birds leading to better poultry yield. His noble objective was to increase productivity of food to meet the increasing need of the increasing population around the globe. This suggestion may be considered as a “case of classic economic interest” without hampering our health just by concentrating on the proper and strict enforcement of the existing law for the same.$^{[9]}$

To prevent any residues of antibiotics in food and food products of animal origin, maximum residual limits (MRL) and withdrawal periods are set by regulatory agencies. Regulatory
authorities set the MLRs after thorough evaluation of the findings from extensive pharmacological and toxicological studies on the particular substance. Withdrawal period is the time between the last dose of antibiotic given to animals through food and consumption of animals as food. [10]. And these MRLs and withdrawal periods need to be strictly obeyed by the poultry farmers keeping in mind the health and safety of myriads of consumers of poultry. This safety measure when implemented would hopefully help in future consumption of chicken without fear.

REFERENCES
5. http://agritech.tnau.ac.in/animal_husbandry/ani_chik_breeds%20of%20chicken.html