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Opinion Article

Mitigation of Antimicrobial Resistance through Biosafety in Broiler Farms

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Opinion

Currently, antimicrobial resistance is one of the main global concerns in animal and human health (World Organization for Animal Health, 2019). According to O Neill [1], by 2050, bacterial resistance could cause the deaths of approximately 10 million people each year. The widespread use of antimicrobial drugs, both in humans and animals, has favored the selection and dissemination of bacterial resistance worldwide [2]. The use of antimicrobials as growth promoters in animal production, associated with the lack of development of new molecules with antimicrobial action for human and animal health, aggravates this problem. To evaluate the different scenarios, *Escherichia coli* has been used as an indicator of antimicrobial resistance in monitoring programs in animal production. This bacterium is part of the intestinal and respiratory microbiota of human and animals and is present in the environment. In addition, it is a bacterium easily recovered and grown in laboratories, which facilitates its use in monitoring (World Organization for Animal Health, 2019). Several studies have been reported by researchers evaluating the antimicrobial resistance of this bacterium in animals and environments, through antibiotic susceptibility testing (antibiogram) and the detection of resistance genes [3-5]. Antimicrobial resistance is considered multifactorial, and several risk factors have been described by Caffrey et al. [6] in a study carried out in broiler flocks in Canada. The use of antimicrobials in egg vaccination, the addition of growth promoters in the feed, and the use of hydrogen peroxide to disinfect water contributed to the increase in antimicrobial resistance in poultry farms. While measures to control wild birds and manage poultry manure have contributed to mitigating antimicrobial resistance in bacteria isolated from farms.

In addition to the risk factors described, several biosafety measures are important for disease prevention and, consequently, for reducing the problem of antimicrobial resistance in bacteria in poultry farms. The hygiene, cleaning, and disinfection of the equipment, as well as the employed an all in all-out system, are important measures to eliminate the presence of bacteria from one batch to the next. The acquisition of chicks without resistant bacteria and the administration of probiotics, prebiotics, and symbiotics prevent contamination by multi-resistant bacteria in the animals' microbiota. Care must be taken to avoid contamination of silos and feed by bacteria resistant to antimicrobials. Building, equipment, and litter can pose a risk to environmental contamination. The use of vaccination programs prevents the occurrence of diseases in poultry farms and consequently reduces the need for therapeutic treatment with antimicrobials. These biosecurity measures can contribute to the control of antimicrobial resistance in poultry farming.

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