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Editorial

Preliminary Interventions Against the Introduction of Pathogens to the Poultry Herd During Primary Production

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A multilevel intervention strategy with sequential intervention approaches would be the optimal solution in primary production, that aimed to induce different events in the infection cycle. The main focus would be to prevent pathogens from entering the herd (mainly via biosecurity). When we talk about biosecurity, it can be defined as a set of preventive measures implemented to reduce the risk of transmission of infectious diseases from the reservoirs of the infectious agent to the target host. Obviously, security plans will have to vary depending on the different circumstances; some risks will be generic and global, while others will depend on time, location, resource availability, etc. A conventional, modern, well maintained and limited access chicken coop should be considered bio-safe. If biosecurity is implemented rigorously and consistently, then pathogens are not transported from outside the house to the interior. Practical biosecurity measures at the farm level have been determined as the main strategy to avoid colonization of flocks of housed broilers with pathogens that enter the processing plant and, therefore, the food chain. The effective implementation of hygiene measures can lead to a low number of microorganisms and a small variability in the microbial count. Strict use of a hygienic barrier can reduce the risk of flock infection and seems especially important when there are other livestock on the farm. The use of boots, clothing, specific household covers and the effective use of socks are associated with a lower risk of herd infection. If this approach does not prevent colonization of poultry with pathogens, the next step will be to reduce the susceptibility of the flock to infections (for example, by food and water additives, vaccination or selective breeding). The different strategies developed to reduce pathogenic populations are based on the acidification of the pathogen environment, such as the use of organic acids (formic acid, acetic acid, lactic acid and propionic acid), as individuals or in combination to acidify drinking water and litter. Poultry vaccination against pathogens has been considered a more effective measure than strict hygiene practices in some studies. Poultry vaccination performed by serum and mucous antibodies. These antibodies are not therapeutic during the short life of intensive broilers (about 6-7 weeks) but are, at least in part, protective against subsequent experimental challenges. Both control options should reduce the number of pathogens associated with poultry in the environment and those that enter the food chain. If these two approaches failed to prevent infection, the next step would be to reduce the amount of pathogens in the intestines of the birds at the time of harvest (for example, by dosing bacteriophages or bacteriocins). Bacteriophages are obligate intracellular parasites that infect bacteria. Phages are classified as lytic or lysogenic based on their replication strategy. For phage application both before and after harvesting to control unwanted bacteria in food, the term "biocontrol" is used for "phage therapy." The use of host-specific bacteriophages has been attempted by several authors to address pathogens in poultry farms. The lytic activity of bacteriophages could be used to kill bacteria. Such phages generally have a narrow host spectrum and do not interact with other bacterial species (for example, other members of the intestinal flora). Phages bind and penetrate bacterial cells through a receptor (for example, proteins, LOS). Then phage multiplication occurs and phage of the progeny are released by lysis of the host bacteria to infect another host. Bacterial resistance to phages occurs when these bacteria induced modification in their receptors. Therefore, it is very important to realize that the control approaches implemented on farm are considered the key strategic control point, since the host intestine is the only point of amplification in the food chain.

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