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Integrated Strategies for Sustainable Coccidiosis Control in Poultry

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Coccidiosis, caused by Eimeria species, is a major parasitic disease affecting poultry production worldwide. The expansion of the global poultry industry has increased its economic impact, with annual losses exceeding 10 billion. Coccidiosis remains a significant health concern in broilers and cage-free pullets. Although seven Eimeria species were traditionally recognised in chickens, advances in molecular biology and genomic studies have improved understanding of their diversity, pathogenicity, and interactions with intestinal microorganisms (Macdonald *et al.,* 2019).

Three Newly Identified Eimeria Species

Three additional Eimeria species *E. lata, E. nagambie* and *E. zaria* were identified following investigations of a vaccinated broiler breeder flock. These species can cause disease and may replicate in chickens vaccinated with existing anticoccidial vaccines. However, studies indicate that ionophore anticoccidial drugs can control them. Molecular surveillance has detected these species across the Americas, Africa, Asia, Europe, and Oceania, highlighting the need for improved diagnostic methods.

Understanding Eimeria Populations

Identifying Eimeria species accurately is challenging because their oocyst morphology can overlap and mixed infections are common. Diagnostic techniques include PCR, quantitative PCR (qPCR), and loop-mediated isothermal amplification (LAMP). Next-generation sequencing (NGS) of the 18S rRNA gene enables the identification and semi-quantitative assessment of different Eimeria species and strains. It also supports analysis of population diversity and infection patterns.

Eimeria–Microbiome Interactions

Eimeria infections can disrupt the intestinal microbiota, causing dysbiosis and negatively affecting gut health. In particular, E. maxima can predispose chickens to necrotic enteritis caused by Clostridium perfringens. Coccidiosis has also been associated with increased colonisation or shedding of foodborne pathogens such as *Salmonella enterica serovar Typhimurium* and *Campylobacter jejuni.* Changes in beneficial and other intestinal bacterial populations can impair intestinal function, reduce litter quality, increase footpad dermatitis and hock or breast lesions, and negatively affect productivity and bird welfare. Therefore, controlling both clinical and subclinical coccidiosis is essential (Nicholds *et al.,* 2021).

Innovations in Anticoccidial Control

Current control strategies include anticoccidial drugs, live vaccines, and integrated programmes.

Anticoccidial drugs: Ionophores and synthetic chemical anticoccidials are widely used, although their availability depends on regional regulations and production systems.

Vaccination: Live vaccines are increasingly used, particularly in antibiotic-free production systems. Delivery methods include sprays, liquids, gels, beads, and in ovo administration.
Bioshuttle programmes: These combine vaccination with subsequent chemical anticoccidial treatment to help manage the effects of vaccination and improve control.
Resistance management: Vaccination can help reduce drug resistance by reintroducing drug-susceptible Eimeria strains into poultry houses.
Species-specific vaccination: Vaccination programmes may prioritise species affecting young birds, while including species that are more relevant to older chickens in subsequent or combined vaccination programmes.

Complementary Feed Additives

Prebiotics, probiotics, synbiotics, essential oils, phytobiotics, and yeast extracts can support intestinal health and improve production performance. These additives may be particularly useful alongside live vaccination programmes. However, they are currently considered complementary strategies rather than complete replacements for established anticoccidial drugs and vaccines.

Conclusion

Coccidiosis control is evolving through the identification of new Eimeria species, molecular diagnostic techniques, improved understanding of host–microbiome interactions, and innovative vaccination and medication programmes. An integrated approach combining accurate diagnosis, effective vaccination, appropriate anticoccidial drugs, resistance management, and supportive feed additives is essential for improving poultry health, welfare, and productivity.

References

1. Macdonald, S.E., van Diemen, P.M., Martineau, H., Stevens, M.P., Tomley, EM., Stabler, R.A., et al. (2019). Impact Of Eimeria tenella Coinfection on Campylobacter jejuni Colonization of the Chicken. *Infection & Immunity*, 87.
2. J.F., McQuain, C., Hofacre, C.L., Mathis, G.F., Fuller, A.L., Teig, B.E., et al. (2021 The Effect of Different Species of Eimeria with Clostridium perfringens on Performance Parameters and Induction of Clinical Necrotic Enteritis in Broiler Chickens. *Avian Diseases*, 65, 132-137.