

Infectious bronchitis virus (Gammacoronavirus) in poultry farming: Vaccination, immune response and measures for mitigation

ABSTRACT

Infectious bronchitis virus (IBV) poses significant financial and biosecurity challenges to the commercial poultry farming industry. IBV is the causative agent of multi-systemic infection in the respiratory, reproductive and renal systems, which is similar to the symptoms of various viral and bacterial diseases reported in chickens. The avian immune system manifests the ability to respond to subsequent exposure with an antigen by stimulating mucosal, humoral and cell-mediated immunity. However, the immune response against IBV presents a dilemma due to the similarities between the different serotypes that infect poultry. Currently, the live attenuated and killed vaccines are applied for the control of IBV infection; however, the continual emergence of IB variants with rapidly evolving genetic variants increases the risk of outbreaks in intensive poultry farms. This review aims to focus on IBV challenge–infection, route and delivery of vaccines and vaccine-induced immune responses to IBV. Various commercial vaccines currently have been developed against IBV protection for accurate evaluation depending on the local situation. This review also highlights and updates the limitations in controlling IBV infection in poultry with issues pertaining to antiviral therapy and good biosecurity practices, which may aid in establishing good biorisk management protocols for its control and which will, in turn, result in a reduction in economic losses attributed to IBV infection.