Practical aspects of estimation of optimal time for vaccination of chicken against IBD with use of „Deventer formula”

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Abstract

One of the most commonly applied vaccination strategies against chicken infectious bursal disease (IBD) is the use of live vaccines at the optimal time estimated with the use of Deventer formula. The present study investigated the impact of different factors on maternally derived antibodies decline and therefore on the vaccination schedule against IBD. Our results suggest that blood collection from birds older than 3 days is more reliable in order to estimate the optimal date for IBD vaccination, due to disturbances in yolk sac resorption early after hatch.

Key words: chickens, Gumboro disease, vaccination, Deventer formula

Introduction

Infectious bursal disease (IBD), also known as Gumboro disease, is a highly infectious, viral (IBDV belongs to the Birnaviridae family) disease of chickens. The greatest susceptibility to the clinical course of IBD is observed in birds infected between 3 and 6 weeks of age (Müller et al. 2012) which results from the maturation of B lymphocytes (target cells for IBDV) in the bursa of Fabricius. While in older birds the damage caused by IBD is less prominent, IBDV infection of 3-6 week old and younger poults is responsible for immunosupression resulting from B cell depletion (Müller et al. 2003, Withers et al. 2005). Considering the above and IBDV worldwide distribution as well as their great resistance to environmental and chemical agents, IBD is one of the most economically important diseases of chickens.

A number of IBD vaccination strategies have been applied in the field and new generation IBD vaccines (vector and complex vaccines) are available on the market (Müller et al. 2012). So far, one of the most commonly applied vaccination strategies of broiler chickens is the application of live conventional vaccines, characterized by different maternally derived antibodies (MDA) titer break – through (most commonly 250 or 500). The basic assumption of „Deventer formula” is that serological examination of chicken poults enables determination of the optimal day for vaccination of chickens against IBD with the use of known MDA half-life (de Wit 2001). Recent studies demonstrated the significance of Deventer formula...