

The Faculty of Veterinary Medicine of Urmia University

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Title: Cytokine and acute-phase proteins response following vaccination against infectious bronchitis in broilers

Abstract:

Background: Infectious bronchitis (IB) is an important disease of poultry and vaccination is the best method of preventing IB in the poultry industry worldwide.

Objectives: This study was designed to evaluate cytokine and acute-phase protein (APP) responses and their correlations with antibody titers following vaccination regimes against IB in the broiler.

Materials and methods: Broilers were vaccinated with H120 and 1/96 vaccine strains, and MIX (H120 + 1/96) vaccine strains on days 0 and 14. Heterophils/lymphocyte ratio, acute-phase proteins including chicken serum amyloid A (SAA), chicken pentraxin 3 (chPTX3), chicken interleukin 1 β (IL-1 β), chicken interleukin 6 (IL-6) levels, and antibody titers were measured.

Results: An increase in the H/L ratio, SAA, chPTX3, IL-1 β , and IL-6 levels in vaccinated groups were observed one day after the first (highest rates) and second (lower levels) vaccination up to 3 days in three different patterns, then started to decrease. The results showed an immediate, short-lived response and moderate increases in all criteria. Changing patterns of APPs were different but in similar pattern after the first and second immunization in vaccinated groups. A positive correlation between all criteria values on days 1 and 15 with antibody titers on day 28 may indicate agonistic cross-regulation.

Conclusion: Different types of IB vaccines could induce different patterns of APPs responses, which can be used to evaluate immune response outcomes in vaccine design, development, and administration. The IL-6 with the highest increase can be a sensitive parameter and chPTX3 with the high increase could be an important criterion.

Keywords: APP, broilers, cytokines, IB, Vaccination