Analysis of the correlation between the level of anti-Salmonella antibodies in egg yolks and the presence of these microorganisms in egg contents following experimental infection of hens with Salmonella Enteritidis and after treatment with selected antibiotics

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Abstract

Serological tests applied in poultry flocks can be a valuable tool in assessing health of hens. One obstacle in making this assessment is that results of serological tests in a given flock are not always correlated with results of bacteriological tests. The aim of this study was to determine dependencies between the level of antibodies in egg yolk and the contamination of egg contents (whites and yolks) with Salmonella Enteritidis bacilli. Infected birds were also treated with selected antibiotics. It was determined that Salmonella Enteritidis was not found in experimentally infected laying hens until day 12 post-inoculation. The results of the study also suggest the existence of relation between the level of anti-Salmonella antibodies in egg yolks and the frequency of isolation of Salmonella from eggs. It was also found that the lowest level of yolk antibodies was found in the group of birds treated with enrofloxacin.

Key words: Salmonella, eggs, antibodies, antibiotics

Introduction

Egg yolks are a source of antibodies that can be used for identifying Salmonella Enteritidis infections in hens. Serum and yolk antibodies can be used to detect infections in experimentally, as well as naturally infected hen flocks (Chart et al. 1990, Gast and Beard 1990b). Serological tests can be a useful tool for assessing the health of the hens. One obstacle in making this assessment is that results of serological tests in a given flock do not always correlate with results of bacteriological tests of eggs (Cooper et al. 1989). Factors directly and indirectly influencing the level of yolk antibodies can also seriously limit the usefulness of serological tests in diagnosing Salmonella infections. One of these factors is the use of antibiotics in poultry flocks. The effectiveness of an antibiotic against the infecting microorganisms should be enhanced by immune system activity. In most cases the mechanism of action of the antibiotic on the immune system is enhanced by the presence of antibodies.