Research Paper

Real Time PCR Quantification and Differentiation of both Challenge and Vaccinal Mycoplasma gallisepticums trains Used in Vaccine Quality Control.

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ABSTRACT
Mycoplasma gallisepticum is an economically important pathogen of poultry worldwide, causing chronic respiratory disease in chickens and turkeys. Vaccination of poultry with Mycoplasma gallisepticum live vaccines is an approach to reduce susceptibility to infection and to prevent economic losses. The goal of this study was to develop an alternative method for evaluation of live and killed vaccine using quantitative differential real time PCR (rt-PCR) assay. Real time PCR assay was implemented for titration and identification of three types of Mycoplasma gallisepticum (F, ts-11 and field strain). Three groups of chicks were vaccinated by using F- strain, ts-11 and killed vaccine and the forth group was considered control. Challenge test was applied by using Mycoplasma gallisepticum field strain (10^8 CFU) at three weeks post vaccination. Antibody ELISA titers against Mycoplasma gallisepticum were 319, 259 and 1009 for F, t-11 and killed vaccine respectively at 3 weeks post vaccination. The protection rates were 81.5%, 74%, and 66.6% for F- strain, ts-11 and killed vaccine respectively that was determined by air sac lesion scour. Using quantitative differential rt-PCR for necropsied birds at 5 days post challenge 7 days post challenge and 14 days post challenge demonstrated that the F-strain vaccine had ability to prevent shedding of field strain at 14 days post challenge mean while the ts-11 and killed vaccine decreased shedding of field strain from 10^8.1 to 10^5.1 and 10^8.6 to 10^5.8 CFU respectively at 14 days post challenge. In this study, rt-PCR had ability to identify and quantify of two types of vaccines (F and ts-11) and field strain. 

**Keywords:** Mycoplasma, rt-PCR, Vaccine, Poultry
In this study, we have investigated the effect of essential oils extracted from five different herbal plants against Salmonella and Escherichia coli. According to the results of this study, it was found that some of the essential oils had the highest antibacterial properties. The maximum inhibition zone in diameter against Salmonella and Escherichia coli were respectively 26.7 and 22.5 mm that concern about isolated from infected broiler flocks. Among these, Carum copticum and Carum carvi had a stronger antibacterial effect than tetracycline. So, after the complementary studies, some of these herbal plants can be suggested as alternatives to antibiotics for treating infections caused by these bacteria in poultry industry. The emergence of antimicrobial resistance and its potential harmful threat to human health has led to a need to find safe alternatives for the treatment of infections. The inhibitory effect of these essential oils was stronger than tetracycline, which was used as a control group. Among these, Carum copticum and Carum carvi had a stronger antibacterial effect than tetracycline. So, after the complementary studies, some of these herbal plants can be suggested as alternatives to antibiotics for treating infections caused by these bacteria in poultry industry.

Keywords:
- Salmonella spp
- Escherichia coli
- Carum copticum
- Carum carvi
- Essential oils
- Herbal plants
- Antimicrobial resistance
- Alternatives to antibiotics
- Poultry industry

References: