

COMPARATIVE PROTECTION OF DIFFERENT VACCINATION PROGRAMMES AGAINST NEWCASTLE DISEASE IN COMMERCIAL LAYING CHICKENS BEFORE AND AFTER CHALLENGE

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INTRODUCTION

Newcastle disease (ND) is a viral disease caused by a virus recently reclassified by the International Committee of Viral Taxonomy as Orthoavulavirus aviar-1 (AOAV-1), within a new subfamily Avulavirinae of the family Paramyxoviridae (ICTV, 2019). The virus infects more than 200 species of birds with different degrees of severity depending on the host and environmental conditions (Miller P.J and Koch G., 2013). Disease outbreaks reported in commercial layers in different parts of the world have shown the great impact of the disease (Umali, D. V., et al, 2015, Khorrajya JH). Whilst several studies have evaluated and compared the protection induced by vaccination against mortality and nervous sequelae in broilers, there are no published studies regarding the impact of the disease on egg production and shell quality in experimentally challenged laying birds. The objective of this study was to evaluate the effect of the protection induced by four vaccination programmes against NCD on the quality and percentage of egg production in experimentally challenged commercial layers.

MATERIALS & METHODS

90 birds were used which were assigned to 3 treatment groups of 30 birds each. Group T2 received the cloned La Sota vaccines in the second and eleventh week and the La Sota conventional vaccine in the eighth week. Groups T3 and T4 received 3 cloned La Sota vaccines from different sources at the same ages. All the groups received polyvalent inactivated vaccines from different sources in the third and fourteenth week. The birds were challenged at 27 weeks of age with 0.1mL of an inoculum containing a strain vENC GXII LD50 and titre 10⁶ intramuscularly and with an intracranial pathogenicity index (ICPI) of 1.88. The variables evaluated daily were the percentage of cumulative egg production and the egg quality, during the two weeks post infection.

The study was conducted in the Laboratory of Avian Pathology of the Faculty of Veterinary Medicine, National University of San Marcos

The daily egg production was obtained separately for each treatment, weighing of eggs, uniformity of eggs, food consumption and classification of eggs. (Hy-line, 2018).

The evaluation of egg quality included the percentage of commercial eggs of top quality or of low quality. Depigmentation of the shell, coltsfoot eggs and dirty and broken shells were considered to be of low quality.

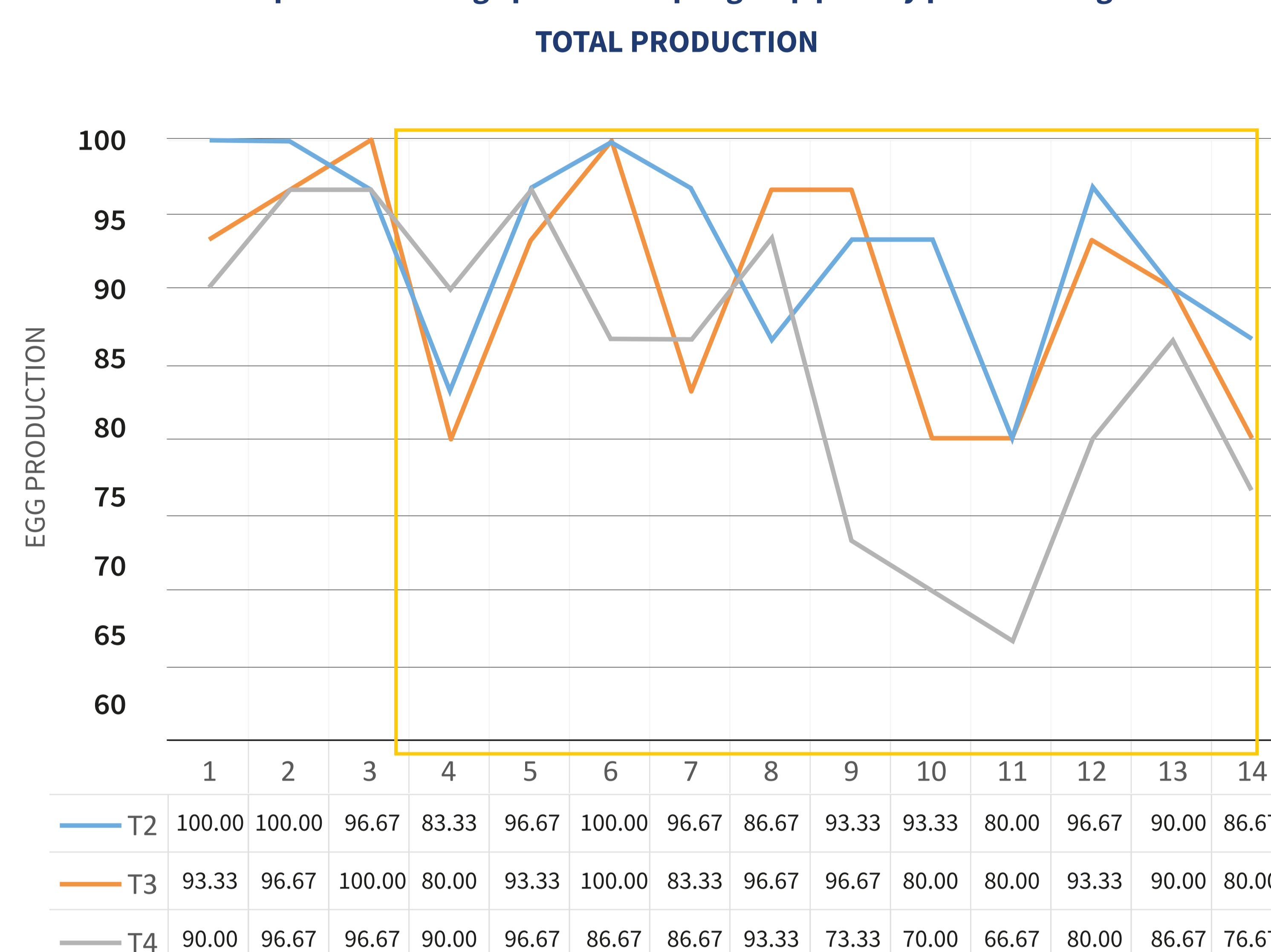
RESULTS

The percentage of production and the quality of eggs during the 14 days were analysed for the three groups challenged in production.

Table 1. Percentage production per group during the 14 days post challenge.

% DAILY PRODUCTION				
Week	DPI	T2	T3	T4
27	1	100.00	93.33	90.00
27	2	100.00	96.67	96.67
27	3	96.67	100.00	96.67
27	4	83.33	80.00	90.00
27	5	96.67	93.33	96.67
27	6	100.00	100.00	86.67
27	7	96.67	83.33	86.67
28	8	86.67	96.67	93.33
28	9	93.33	96.67	73.33
28	10	93.33	80.00	70.00
28	11	80.00	80.00	66.67
28	12	96.67	93.33	80.00
28	13	90.00	90.00	86.67
28	14	86.67	80.00	76.67
AVERAGE		92.86	90.24	85.00

Graph 1. Percentage production per group per day post challenge



The percentage of eggs with low shell quality was 10.24%, 8.81%, and 13.57% for groups T2 to T4 respectively.

CONCLUSIONS

All the vaccination programmes protected the birds from mortality and respiratory or nervous clinical signs.

Egg production was affected in the four experimental groups as well as egg shell quality, however, the percentages of low production and shell quality differed between groups.

The largest drop in production was observed in the week following the challenge and the highest percentage of eggs of low quality was also observed during this period.

The results of the study allow us to conclude that the protection induced by vaccination against the decrease in egg production and the quality of the shell vary according to the source of the vaccine used.

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