



EFFECT OF SPRAY DRIED PORCINE PLASMA ON PERFORMANCE AND GUT HEALTH OF BROILERS CHALLENGED WITH NECROTIC ENTERITIS

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OBJECTIVE

To evaluate the effects of early feeding (0-10 days) of spray dried porcine plasma (SDP) on growth performance and gut health of chickens challenged with NE.

MATERIALS & METHODS

- 816 parental male d-old chicks (Ross 308)
- 2 (NE challenge: No, Yes) × 2 (SDP: 0, 2%) factorial arrangement
- NE Challenge: gavage with 5000 each of *Eimeria maxima* and *E. acervulina* and 2500 *E. brunetti* sporulated oocysts on d 9; then 2 times 5 hr apart with 108 colony forming units of *Clostridium perfringens* type G EHE-NE18 on d 14.
- 12 replicates per trt with 17 birds started in each pen
- Performance and relative organs weight were measured
- NE lesions in the intestinal segments were scored
- Gut leakage measured through serum FITC-d concentration
- Serum immunoglobulins A, G and M were analyzed
- Serum α -1 acid glycoprotein (α AGP) was analyzed using ELISA



Healthy Intestine



NE Challenged Intestine



RESULTS & DISCUSSION

- Early feeding of SDP decreased FCR (1.033 vs 1.078; $P < 0.001$) (from d 0 to d 8 before NE challenge)
- SDP decreased FCR (1.398 vs 1.413; $P < 0.01$) and tended to increase weight gain 1317 vs 1292; $P = 0.078$) from d 0 to 29.
- NE challenge increased FCR (1.442 vs 1.396; $P < 0.001$) from d 0 to 29
- No interactions between SDP and NE challenge were observed for feed intake, gain or FCR

EFFECTS OF SDP ON SERUM IMMUNOLOGICAL PARAMETERS OF BROILERS CHALLENGED WITH NECROTIC ENTERITIS

Porcine Plasma (%)	IL-6	IgA	IgM	IgG	a-AGP
0	0.237 ^a	178.3	165.7	1195	209.1 ^a
2	0.169 ^b	174.2	168.5	1112	184.6 ^b
SEM	0.019	13.17	13.48	82.89	8.66
Challenge					
No	0.189	143.1 ^b	150.8	1168	180.9 ^b
Yes	0.212	209.3 ^a	183.4	1140	212.8 ^a
SEM	0.020	13.17	13.48	82.89	8.66
P-values					
Porcine Plasma	0.015	0.826	0.886	0.483	0.051
Challenge	0.239	<0.001	0.095	0.811	0.013
Porcine Plasma x Challenge	0.494	0.753	0.297	0.815	0.661

^{a,b}values within a column with different letters differ significantly ($P < 0.05$)

- NE challenge resulted in increased lesion scores in the intestine
- NE increased leaky gut evidenced by higher FITC-d concentration
- SDP decreased leakage of FITC-d from gut to serum only in NE challenged birds
- Birds fed SDP had larger relative bursa on d 16 and d 35
- NE increased IgA and α -AGP; SDP decreased IL-6 and tended to decreased α -AGP (see Table) with no interactions.

CONCLUSION

These findings demonstrate that early feeding of SDP improves growth performance irrespective of NE challenge through diminished intestinal inflammation.

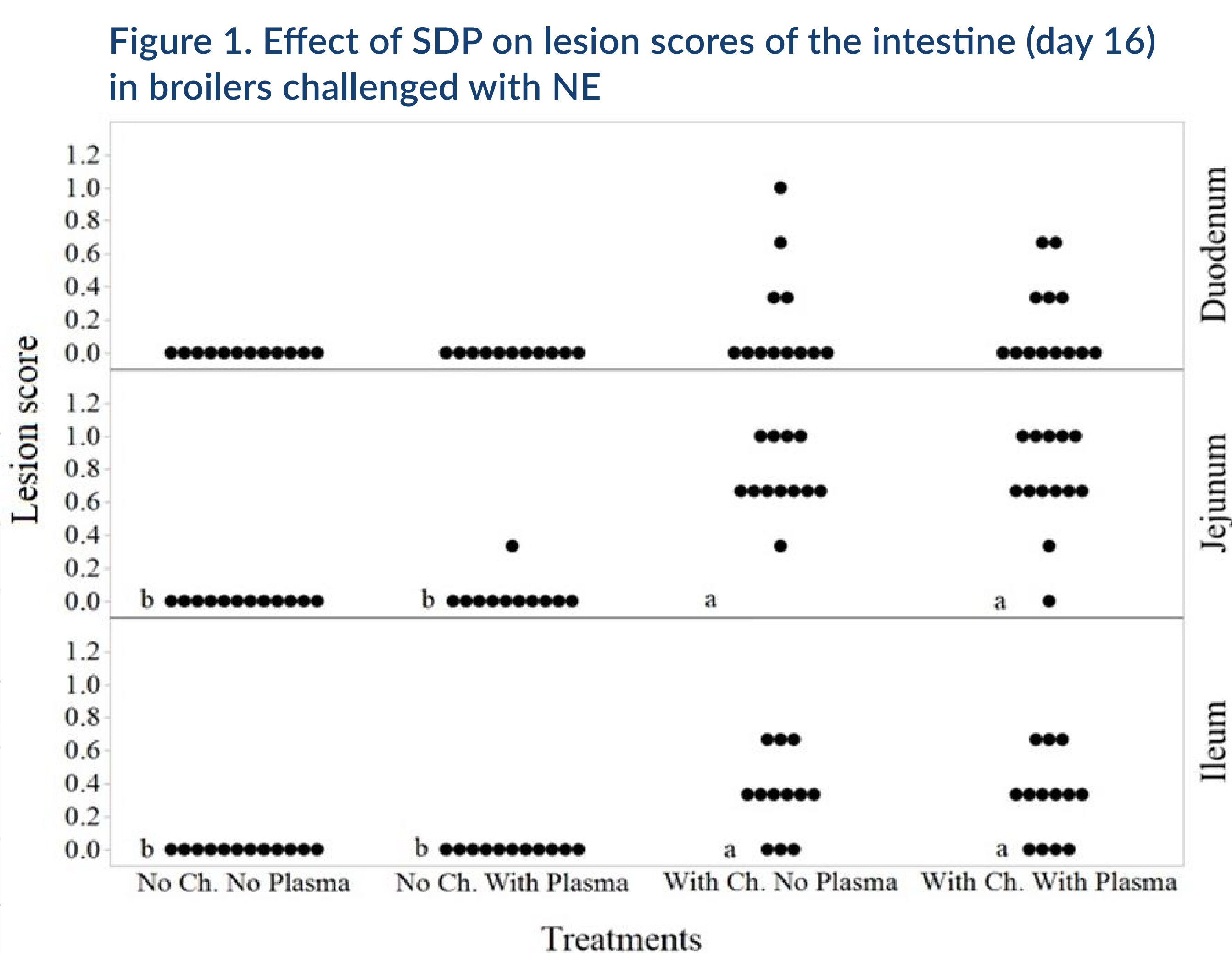


Figure 1. Effect of SDP on lesion scores of the intestine (day 16) in broilers challenged with NE