Effect of L-Selenomethionine supplementation during stress periods of starter broilers and chronic cyclic heat stressed finishing broilers

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INTRODUCTION

The onset of broilers and the exposure of finishing broilers to heat can have a significant impact on broiler production. Several papers describe the induction of oxidative stress due to exposure to heat. Selenium (Se) is known for its antioxidative capacity. This trial examines the effect of extra dietary supplementation with L-Selenomethionine (L-SeMet) above normal feed Se levels. It is hypothesized that this could improve the performance of **starter broilers** and **heat stressed finishing broilers**.

MATERIALS & METHODS

- 2 treatments:
  - Control diets containing 0.5, 0.4 and 0.5 mg/kg total Se from raw materials and added sodium-selenite providing sufficient selenium for control starter, grower and finisher diet, respectively.
  - Treatment: 0.2 mg/kg supplementation in form of L-Selenomethionine (L-SeMet, supplied through the preparation Excential Selenium4000) on top
- 4 replicates with 20 Ross308 birds each
- Chronic cyclic heat stress model: temperature increase to 34°C for 7h, daily from d28 until d41 of age

Table 1: Dietary Se and dig lysine (dig lys) contents

	Period	Control Se content (mg/kg)	Treatment added Se (L-SeMet) (mg/kg)	Dig lys content (g/kg)
Control (T1)	Start d 0-10	0.5	0	11.5
	Grower d 11-25	0.4	0	10.5
	Finisher d 26-41	0.5	0	9.5
L-SeMet (T2)	Start d 0-10	0.5	0.2	11.5
	Grower d 11-25	0.4	0.2	10.5
	Finisher d 26-41	0.5	0.2	9.5

RESULTS

In table 2 the average daily gain (ADG), body weight (BW), average daily feed intake (ADFI) and feed conversion ratio (FCR) results are shown for the starter, grower and finisher period.

Table 2: Performance results for starter, grower and finisher period

	ADG		BWG		ADFI		FCR	
	T1	T2	T1	T2	T1	T2	T1	T2
0-10d	21,5	22,4	260	270	26,6	26,7	1,240	1,191
11-25d	66,4	65,5	1257	1252	98	98	1,484	1,500
26-41d	87,0	90,7	2649	2711	206	185	**2,380[a]**	**2,043[b]**

Starter period:
Numerically higher ADG and lower FCR

Finisher period (heat stress period):
- Numerically higher ADG
- Statistically improved FCR

Overall mortality was 3.75 and 2.50%, for control and L-SeMet, resp.

CONCLUSION

Supplementation of broiler diets with L-Selenomethionine could be a nutritional tool to optimize broiler performance during stressful periods, the onset and specifically during heat stress in finishing broilers.