



Doses of chromium propionate on the performance of finishing lambs

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1. Introduction

Chromium is an enhancer in energy diets to improve animal performance, but the recommendation for chromium in ruminants has not been established.

This study aimed to evaluate the effects of two supplemental chromium propionate doses on the performance of finishing lambs

2. Methods

Treatments:

- 1. CTL: no added chromium
- 2. Cr0.5: CTL + 0.5 mg/kg DM
- 3. Cr1.5: CTL + 1.5 mg/kg DM

Table 1
Chemical composition of the diet of lamb with different supplementation chromium.

Ingredients, % DM	CTL	Cr0.5	Cr1.5
Grass hay <i>Tifton 85</i>	15	15	15
Corn	61	61	61
Soybean meal	20	20	20
Limestone	2	2	2
Mineral Supplement ^a	2	2	2
Chromium propionate ²	0.0000	0.0005	0.0015
Nutrients, % DM			
Dry matter	90.21	90.01	90.28
Organic matter	6.16	5.88	6.13
Crude protein	15.09	15.60	15.15
Neutral detergent fibre (NDF)	24.14	26.40	27.12
Acid detergent fiber (ADF)	13.56	16.02	15.01
Ether extract	4.62	4.38	4.54
Calcium	12.12	11.10	12.11
Phosphorus	3.20	3.08	3.16
Chromium (ppm of DM)	2.89	3.98	4.50

CTL - no supplementation; Cr0.5 - 0.5 mg/kg DM and Cr1.5 - 1.5 mg/kg DM of chromium propionate.

- 29 uncastrated male lambs, 90 days old and weighing an average of 21.16 kg.
- Performance
- The experimental period: 64 days.
- The experimental design was completely randomized, and means were compared using the Tukey test at 5% probability.



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3. Results

Table 2
Performance of lambs supplemented with different levels of chromium propionate.

	Treatment			Mean	SEM	P-value
	CTL	CR0.5	CR1.5			
Initial body weight, kg	21.24	21.13	21.13	21.16	0.50	0.8473
Body weight at slaughter, kg	44.18	44.95	43.64	44.25	0.61	0.5251
Dry matter intake, kg/day	1.27 ^b	1.29 ^b	1.48 ^a	1.34	0.02	<0.0001
Average daily gain, kg	0.381	0.397	0.375	0.384	0.00	0.4763
Feed efficiency, kg/kg	0.31 ^a	0.31 ^a	0.26 ^b	0.29	0.00	0.0002

CTL - no supplementation; Cr0.5 - 0.5 mg/kg DM and Cr1.5 - 1.5 mg/kg DM of chromium propionate. SEM - standard error of the mean; a,b: means in the same row with different superscript letters differ by Tukey's test probability at 5 %.

4. Discussion

Chromium (Cr) has been shown to improve glucose efficiency and insulin sensitivity, and Cr-supplemented diets can increase the rate of glucose disappearance to some extent. This can result in shorter intervals between meals and an increase in feed intake (Kargar et al., 2019).

At 1.5 mg/kg DM, the higher feed intake was not sufficient to increase the animals' weight gain and therefore no improvement in the feed efficiency of the supplemented animals was observed.



Conclusion

We concluded that the concentration of 0.5 mg/kg DM was similar to CTL for the parameters studied, but the supplementation of 1.5 mg/kg DM worsened the performance of the animals.

References

Kargar, S., Habibi, Z., Karimi-Dehkordi, S., 2019. Grain source and chromium supplementation: effects on feed intake, meal and rumination patterns, and growth performance in Holstein dairy calves. *Animal* 13, 1173–1179. <https://doi.org/10.1017/S1751731118002793>.

