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Influence of Monensin and Salinomycin on Growth and Carcass Characteristics in Pelibuey Lambs

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Abstract

Salinas-Chavira, J., Ramírez, R.G., Lara-Pedroza, E. de L., González- Suárez, M. and Domínguez-Muñoz, M. 2005. Influence of monensin and salinomycin on growth and carcass characteristics in Pelibuey lambs. J. Appl. Anim. Res., 28: 93-96.

To study the influence of the ionophores monensin and salinomycin on performance and carcass characteristics in lambs, sixteen intact Pelibuey male lambs were randomly distributed into two treatment groups. These were fed on a diet (14% crude protein, 2.6 Mcal ME/kg) for 60 days. Lambs in one group received 25 ppm of monensin and the other group received 28 ppm of salinomycin. Lambs on salinomycin gained more ($P<0.05$) weight than lambs on monensin (0.244 and 0.194 g/day, respectively), had more ($P<0.05$) feed intake (1059 and 898 g/day) and had greater ($P<0.05$) Longissimus dorsi area (5.5 and 4.9 cm²). However, both groups had similar ($P>0.05$) feed efficiency and subcutaneous fat. It appears that salinomycin is a better growth promoter for Pelibuey lambs fed a conventional diet high in concentrates.

Key words: Lambs, monensin, salinomycin, carcass characteristics, growth performance.

Introduction

In Mexico, the interest in breeding and production of sheep has recently increased, showing a great demand for this type of meat. Traditionally, hair sheep have been raised in extensive form with low productive indices, but increasing demand for lambs has led to the adoption of systems that allow maximum profit to the producer (Trejo,

2001). With the purpose of improving sheep production to satisfy the market with high-quality meat from lambs, intensive growing lamb systems use diets with high levels of concentrates and feed additives such as ionophores that act as growth promoters.

Monensin and salinomycin are ionophores commonly used in feedlot cattle diets; however, information about monensin and salinomycin in feedlot Pelibuey lambs is limited. The objectives of this research were to measure the effect of monensin and

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salinomycin on weight gain, feed conversion and carcass characteristics in Pelibuey lambs fed a conventional diet high in concentrates.

Materials and Methods

The present study was performed at the Nutrition Building of Facultad de Medicina Veterinaria y Zootecnia, Universidad Autónoma de Tamaulipas, in Ciudad Victoria, Tamaulipas, México. This city is located at 23° 44' 06" north latitude and 97° 09' 50" west longitude, at an altitude of 340 m. The annual mean temperature of the region is 25°C, with 900 mm of annual precipitation (INEGI, 1995).

Sixteen intact male Pelibuey lambs were equally and randomly distributed into two treatment groups. All lambs received a diet of 58.5% ground sorghum grain, 16.9% soybean meal, 10% sorghum hay, 6.8% wheat bran, 4% sugar cane molasses, 2% mineral (premix), 1.5% low ruminally bioutilizable fat and 0.3% urea (crude protein 14% and metabolizable energy 2.6 Mcal/kg) to meet the requirements of growing lambs (NRC, 1985). Additionally, lambs in one group (18.0±2.1 kg initial body weight) received 25 ppm of monensin (the level commonly used for feedlot cattle), and the other group (17.8±2.8 kg initial body weight) received 28 ppm of salinomycin (based on the study by Medeiros *et al.*, 1999). All lambs were housed in individual pens (2m²). Before the experimental feeding period that lasted 60 days, lambs were adapted to the diet for 15 days; during that time, they were treated in a conventional way for fattening lambs. Lambs received the diet twice daily (9:00 and 16:00) and had free access to water.

During the experimental period, the daily feed intake was adjusted on an offered-less-refused basis. Animals were weighed four times: at the beginning of the feeding period and every 20 days. At the end of the trial, carcass characteristics were measured

with ultrasound (Aloka, model SSD-500) using a 7.5 MHz linear transducer. Images were taken on the last intercostal space (between the 12th and 13th ribs) on both sides to measure the area of the *Longissimus dorsi* muscle and subcutaneous fat depth. Mean values of both sides were used to estimate data. Data were analysed using Student's 't' test ($P<0.05$) (Steel and Torrie, 1980).

Results and Discussion

The average daily gain (ADG) and feed intake were higher ($P<0.05$) in lambs fed salinomycin than in those fed monensin. It seems that 28 ppm of salinomycin is adequate to obtain a good performance for fattening lambs. These results are in agreement with those obtained by Medeiros *et al.* (1999), who studied the effect of different doses of salinomycin in fattening lambs. They found that lambs consuming a high-concentrate diet with 28 ppm of salinomycin had significantly higher feed conversion than lambs fed other doses of salinomycin. Fluharty *et al.* (1999) did not find differences ($P>0.1$) in ADG or feed conversion in lambs due to ionophore supplementation; however, adding ionophores to the diet resulted in an increased ($P<0.05$) dry matter intake.

Lambs fed monensin or salinomycin exhibited similar ($P>0.05$) subcutaneous fat (Table 1). Similar results were reported by León *et al.* (1999). They found that Pelibuey lambs slaughtered at 8 months of age deposited 3.3 mm of subcutaneous fat. Moreover, Fluharty *et al.* (1999) reported no effect in subcutaneous fat in lambs due to ionophore addition to diets.

The animals fed salinomycin exhibited 11.2% greater *Longissimus dorsi* area than those fed monensin; differences may be because of lower feed intake and ADG in lambs fed monensin. Gibb *et al.* (2001) also reported that steers fed a diet with

Table 1
Growth performance and carcass characteristics of lambs fed ionophores monensin or salinomycin

Item	Treatment		P>F
	Monensin	Salinomycin	
Animals per treatment	8	8	
Initial weight (kg)	17.875±1.885	18.000±2.138	
Average daily weight gain, g	194±0.03	244±0.03	0.02
Average daily feed intake, g	899±110	1059±88	0.01
Feed conversion (intake/gain), kg	4.7±0.6	4.4±0.5	0.2
Fat depth (cm) ¹	0.3±0.03	0.3±0.02	0.4
Longissimus dorsi area (cm ²) ¹	4.9±0.3	5.5±0.5	0.03

¹Mean values of both sides of the lambs.

salinomycin required fewer days to reach the targeted finish (5 mm backfat) than steers fed a diet with or without monensin. Moreover, steers with monensin showed reduced slaughter and carcass weights, compared to steers without monensin. In addition, Pritchard (1996) studied the effect of addition of ionophores to diets for finishing yearling steers. He reported that monensin resulted in lower (P<0.05) cumulative ADG and carcass weights than steers fed diets with other ionophores.

The better growth performance observed in lambs fed salinomycin may be due to a metabolic effect on the use of energy (at a ruminal or systemic level); lambs fed salinomycin consumed more feed and therefore showed more ADG and a larger *Longissimus dorsi* area.

It is concluded that salinomycin is superior to monensin as a feed additive for Pelibuey sheep fed high concentrate diet.

References

Fluharty, F.L., McClure, K.E., Solomon, M.B., Clevenger, D.D. and Lowe, G.D. 1999. Energy source and ionophore supplementation effects on lamb growth, carcass characteristics, visceral organ mass, diet digestibility, and nitrogen metabolism. *J. Anim. Sci.*, 77:816-823.

Gibb, D.J., Moustafa, S.M.S., Wiedmeier, R.D. and McAllister, T.A. 2001. Effect of salinomycin or monensin on performance and feeding behavior of cattle fed wheat- or barley-based diets. *Can. J. Anim. Sci.*, 81:253-261.

INEGI. 1995. Instituto Nacional de Estadística, Geografía e Informática. Anuario Estadístico del Estado de Tamaulipas. Síntesis Geográfica de Tamaulipas. XI Censo General de Población y Vivienda. Aguascalientes, México.

León, Á.E., Olmos, C.M.C., Cruz, M.E. and García, M.R. 1999 Accumulation of body fat in Cuban Pelibuey lambs according to age and feeding level. *Arch. Zootec.*, 48:219-222.

NRC. 1985. *Nutrient Requirements of Sheep*. (6 th. Ed.). National Academy Press. Washington, D.C., U.S.A.

Medeiros, C.M., Carlos, S.A., De Beni, A.M., Costa, C., Nunes, DeO.H. and Loyola, Ch.L.A. 1999. Effects of different levels of salinomycin on the performance and enzymatic functions in confined sheep. *Cien. e Agrotec.*, Lavras., 23:968-972.

Pritchard, R.H. 1996. Ionophore Programs for Finishing Yearling Steers. (OnLine). <http://ars.sdstate.edu/BeefExt/BeefReports/1996/96-4.htm>.

Steel, R.G.D. and Torrie, J.H. 1980. *Principles and Procedures of Statistics*. McGraw-Hill Book Co., New York, U.S.A.

Trejo, M.F. 2001. Perspectivas de la Ovinocultura y su Problemática. Memorias. II Ciclo de Conferencias en Ciencias Veterinarias. Cd. Victoria, Tamaulipas, México, pp. 65-66.

जे. सैलिनास-चाविरा, आर. जी. रामिरेज, ई. डे एल.लारा-पेड्रोजा, एम. गोन्जालेज-स्वारेज, एम. डोमिनग्वेज-मुनोज। पेलीबुए मेमनों के वर्धन और मांसज लक्षणों पर मोनेन्सिन और सैलिनोमाइसिन का प्रभाव।

मेमनों के निष्पादन और मांसज के लक्षणों पर मोनेन्सिन और सैलिनामाइसिन आयनाफोरो के प्रभाव के अध्ययन के लिए सोलह अछत पेलीबुए मेमनों को यादृच्छिक ढंग से दो वर्गों में बांटा गया। उन्हें 60 दिनों तक एक आहार (14% अपरिष्कृत प्रोटीन और 2.6 मेक चयापचयी ऊर्जा/किग्रा) खिलाया

गया। एक वर्ग के मेमनों को 25 पीपीएम की दर से मोनेन्सिन और दूसरे वर्ग में 38 पीपीएम की दर से सैलिनोमाइसिन खिलायी गयी। सैलिनोमाइसिन वर्ग के मेमनों में शरीर भार वृद्धि (244 ग्रा/दिन) मोनेन्सिन वर्ग में भार वृद्धि (194 ग्रा/दिन) से सार्थकतः अधिक थी और इसी क्रम में उनका दैनिक आहार भक्षण 1059 ग्रा और 898 ग्रा में अंतर के साथ लांगिसिमस डार्साई पेशी के क्षेत्रफल (क्रमशः 5.5 और 4.9 वर्ग सेमी) में भी अंतर था। वैसे दोनों वर्गों में आहार उपयोगिता और अधोत्वक् वसा की मोटाई समान थी। ऐसा प्रतीत होता है कि अधिक दाना युक्त पारंपरिक आहार खाने वाले पेलीबुए मेमनों के लिए सैलिनोमाइसिन एक अच्छा वर्धन उत्प्रेरक है।