



Características de carcaça de ovinos suplementados com mistura de óleos essenciais¹

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Resumo: Pesquisas demonstram a ação dos óleos essenciais (OE) sobre a microbiota ruminal. Extratos de plantas contêm OE, possuidores de propriedades especiais que os tornam alternativas potenciais para melhorar a qualidade das carcaças dos ovinos. Este estudo objetivou avaliar as características da carcaça de cordeiros submetidos a crescentes níveis de suplementação com estes componentes. Foram utilizados 40 cordeiros machos não castrados, confinados com a proporção volumoso/concentrado de 50:50. Os tratamentos foram constituídos de cinco diferentes níveis de mistura de óleos essenciais (MOE) de orégano, sálvia e pimenta malagueta: 0mg; 50mg; 100mg; 150mg e 200mg. A mistura de iguais proporções de OE aos níveis de suplementação de até 200mg por dia, não possibilitaram aos cordeiros da raça Texel, incrementos quantitativos e/ou qualitativos às suas carcaças quando confinados do desmame até o abate. Os resultados obtidos no presente trabalho para as características de carcaça corroboram com outros autores que não verificaram diferença significativa para estas variáveis na espécie ovina, utilizando OE na dieta destes animais. No entanto, valores numericamente superiores foram observados para os animais tratados, com tendência positiva aos maiores percentuais de suplementação com os óleos essenciais. Tais resultados sugerem a realização de novos trabalhos para experimentar outras composições e outros níveis de inclusão de misturas de óleos essenciais na dieta de cordeiros.

Palavras-chave: conformação, cordeiros, nutrição, texel

Sheep carcass characteristics supplemented with mixture of essential oils¹

Abstract: Studies show the action of essential oils (EO) on ruminal microflora. Plant extracts contain EO, holders of special properties that make them potential alternatives to improve the quality of sheep carcasses. The objective of this study was to evaluate carcass characteristics of sheep subjected to increasing levels of supplementation with these components. Forty uncastrated males were used, confined to a roughage:concentrate ratio of 50:50. The treatments consisted in five different levels of mixture of essential oils (MOE) of oregano, salvia (sage) and chili pepper 0mg; 50mg; 100mg; 150mg and 200mg. A mixture of equal proportions of EO levels up to a 200 mg daily supplementation, did not allow to the lambs of Texel breed, quantitative increases and/or qualitative to their carcasses when confined from weaning to slaughter. The results obtained in this study for carcass characteristics are similar to other authors who found no significant difference for these variables in sheep using EO in the diet of these animals. However, numerically higher values were observed for animals treated with a positive trend to higher rates of supplementation with essential oils. These results suggest the requirement of new studies trying other compositions and levels of mixtures of essential oils in lamb diet.

Keywords: conformation, lambs, nutrition, texel

Introduction

Together with the wool crisis in the 1980s, the scene of sheep industry has changed and, since then, meat has become the main product of sheep breeding in Rio Grande do Sul. In this sense, the state is the main producer in Brazil, and its industry explores the lamb (sheep meat) market in the center of the country, benefiting from the growing demand for lamb and structuring alternative of a product value chain (Viana et al., 2013). Along with the need of sheep farmers in increasing production demand, important information of the termination systems have been published, taking into account the productive, economic and sustainability producer in the activity. For these reasons, qualitative and quantitative characteristics of the carcass have become extremely important in the retention and expansion of lamb consumption.

Research summarized in papers published by Benchaar et al. (2008) Fandiño et al. (2008), demonstrate the action of essential oils (EO) in the modulation of ruminal microbiota believing they are potential substitute



substances to ionophores improving the quality of sheep carcasses. On this basis, we aimed to evaluate carcass characteristics of lambs submitted to different levels of supplementation with a mixture of essential oils.

Material e Methods

The experiment was conducted in the Teaching Laboratory, Research and IF Farroupilha of Sheep Production - campus Alegrete, Rio Grande do Sul, during the period from November 2011 to January 2012. Forty Texel non-castrated males were used, that after weaning at 60 days, were completed in confinement in individual stalls, divided into five treatments and eight repetitions each, randomly defined, being slaughtered at 32 kg live weight.

The diet fed to the sheep consisted of corn silage and concentrate (soybean meal, ground corn and limestone) in 50:50, and the animals were hand fed twice daily with supply adjustment to 10% leftovers. Supplementation of capsules containing the mixture of essential oils (MOE) was orally twice a day, coinciding with the feeding periods. The treatments consisted of different levels of the mixture of essential oils oregano (*Origanum vulgare*), sage (*Salvia officinalis* L.) and chili pepper (*Capsicum frutescens*) the following provision: Group 1 - negative control without supplementation MOE; Group 2 - 50mg EO mixture; Group 3 - 100mg of EO mixture; Group 4 - 150mg of EO mixture; Group 5 - 200 mg of EO mixture. The slaughter was carried out at the slaughterhouse of the institution according to the rules of Industrial and Sanitary Inspection Regulation of Animal Products – RIISPOA.

The parameters considered for evaluation in this study included hot carcass weight, cold carcass weight, cold carcass yield, breaking the cooling rate, conformation, fat liquoring and fat thickness and pH described by Osorio et al . (1998). It adopted a completely randomized design and the data of each variable for analysis by the SAS System® software (SAS Inst. Inc., Cary, NC) at a significance level of 5%.

Results and Discussion

The results of the qualitative and quantitative characteristics of carcasses of experimental animals are presented in Table 1. The average live weight of lambs was fasting at 31.70 kg, with no difference between treatments. Among the important characteristics in the housing, in this experiment were no statistical differences among the treatments.

Table 1. Carcass characteristics of lambs supplemented with different levels of essential oils.

Variable	0mg	50mg	100mg	150mg	200mg	P
PCQ (Kg)	16.12	16.22	16.15	15.80	16.22	<0.822
PCF (Kg)	15.36	15.77	15.63	15.30	15.76	<0.651
RCQ (%)	50.51	50.38	50.38	51.08	51.47	<0.792
RCF (%)	48.11	49.01	49.01	49.44	50.02	<0.321
IQR (%)	4,7	2,71	3,21	3,18	2,82	<0,163
CONF (1-5)	3.25	3.12	3.12	3.37	3.15	<0.597
ENG (1-5)	3.00	3.06	3.06	3.24	3.25	<0.333
EGS (MM)	2.875	2.625	2.625	2.562	2.625	<0.964
pH ₂₄	5.57	5.67	5.67	5.82	5.85	<0.584

PCQ: hot carcass weight; PCF: cold carcass weight; WHR: hot carcass yield; RCF: cold carcass yield; IQR: the cooling index; CONF: conformation; ENG: greasing; EGS: fat thickness; pH₂₄: pH muscle *l. dorsi* 24 hours after slaughter.

The results obtained in this study corroborate those mentioned by Cañeque & Sañudo (2005), which not verified difference for these variables in sheep using EO in the diet of these animals. However, numerically higher values were observed for the treated animals.

For the cooling index (IQR), arrangements were observed approximately 50% lower for animals receiving 50 or 200 mg of OE, 2.71% and 2.82% respectively, compared to the control group (4.70%). These data could be explained by the greater increase of subcutaneous fat (EGS) or, at most state greasing of carcasses (ENG). However, these differences were not statistically proven, numerically point in favor of the control group.

The average results observed for carcass yield were slightly higher than those found by Simitziz et al. (2008) to supplement lambs males and females only with essential oil of oregano. It is observed that there were no significant differences for any of the variables studied, since the lambs were of the same genotype and received the



same diet, confirming whether the non-effectiveness of the mixture of essential oils, used in an attempt to improve the quality characteristics and quantitative housing.

Conclusions

A mixture of equal proportions of essential oils of oregano, sage and pepper, to up to 200mg supplementation levels for about 60 days, encapsulated and given orally, they did not allow the lambs of Texel, quantitative increments and/or qualitative in features weight, yield, conformation, fat liquoring and fat thickness of their carcasses when confined from weaning to slaughter at 32 kg live weight. These results suggest the need for new research to try other compositions and other levels of inclusion of mixtures of essential oils in lamb diet.

References

BENCHAAR, C.; CALSAMIGLIA, S.; CHAVES, A. V.; FRASER, G. R.; COLOMBATTO, D.; MCALLISTER, T. A.; BEAUCHEMIN, K. A. A review of plant derived essential oils in ruminant nutrition and production. **Animal Feed Science and Technology**, n. 145, p. 209-228, 2008.

CAÑEQUE, V.; SAÑUDO, C. **Estandarización de las metodologías para evaluar la calidad del producto (animal vivo, canal, carne y grasa) en los ruminantes**. Madri: INIA, 2005. 448p. (Serie Ganadera, 3).

FANDIÑO, I.; CALSAMIGLIA, S.; FERRET, A.; BLANCH, M. Anise and capsicum as alternative to monensin to modify rumen fermentation in beef heifers fed a high concentrate diet. **Animal Feed Science and Technology**, v. 145, n.1, p. 409-417, 2008.

OSÓRIO, J. C. S.; OSÓRIO, M. T. M. **Métodos para avaliação da produção de carne ovina: 'in vivo', na carcaça e na carne**. Pelotas: UFPEL, 1998. 98p.

SIMITZIS, P. E.; DELIGEORGIS, S. G.; BIZELIS, J. A. et al. Effect of dietary oregano oil supplementation on lamb meat characteristics. **Meat Science**, v. 79, p. 217-223, 2008.

VIANA, J. G. A.; REVILLION, J. P. P.; SILVEIRA, V. C. P. Alternativa de estruturação da cadeia de valor da ovinocultura no Rio Grande do Sul. **Revista Brasileira de Gestão e Desenvolvimento Regional**, Taubaté, v. 9, n. 1, p. 187-210, jan./mar. 2013.