



Composição química da carne de cordeiros suplementados com óleos essenciais¹

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Resumo: O objetivo deste trabalho foi avaliar a composição química da carne de cordeiros suplementados com uma mistura, em iguais proporções, de óleos essenciais de orégano, sálvia e pimenta malagueta. Utilizou-se 40 cordeiros machos não castrados, da raça Texel, distribuídos aleatoriamente em cinco grupos experimentais, de acordo com os níveis de suplementação diária com a mistura de óleos essenciais: 0 mg, 50 mg, 100 mg, 150 mg e 200 mg. A dieta experimental foi idêntica para todos os tratamentos e os cordeiros foram abatidos ao atingirem 60% do peso vivo a maturidade. Foram determinadas as características físico-químicas da carne como: umidade, matéria orgânica, cinzas, proteínas e lipídeos totais. Os dados foram analisados através do software SAS System[®] admitindo-se o nível de significância de 5%. As características físico-químicas da carne de cordeiro estudadas não sofreram influência significativa ($P < 0,05$) dos níveis de óleos essenciais administrado aos animais. A mistura de óleos essenciais de orégano, sálvia e pimenta malagueta, aos níveis de suplementação de até 200mg por dia, não modificou a composição da carne dos cordeiros estudados. Desta forma, é possível utilizar tais óleos na suplementação de cordeiros sem comprometer a qualidade química da carne.

Palavras-chave: confinamento, ovinocultura, pecuária

Chemical composition of the lambs supplemented meat with essential oils

Abstract: The aim of this study was to assess the composition of the meat of lambs supplemented with an mixture in equal proportion of oregano, sage and chilli pepper essential oils. Were used 40 non castrated males, from Texel breed, distributed randomly into five groups, according to daily supplementation levels with the essential oils mixture of 0 mg, 50 mg, 100 mg, 150 mg or 200 mg. The experimental diet was similar for all treatments and lambs were slaughtered when they reached 60% of body weight maturity. It was assessed the following lamb meat composition traits: moisture, organic matter, ash, protein, and total lipids. Data were regression analyzed using the SAS System[®] software at a significance level of 5%. The lamb meat composition had no significant influence ($P < 0.05$) from the essential oils levels administered to the live animals. The daily supplementation level up to 200mg with a blend of oregano, sage and chilli essential oil did not change the composition of the meat from the studied lambs. Thus, it is possible to use such oils in lambs supplementation without depreciate the meat chemical traits.

Keywords: feedlot, husbandry, sheep breeding

Introduction

Nowadays have being evidenced a solid process of valuing lamb meat in the Brazilian domestic market, through the linear growth of nominal prices. It is also evidenced in farms with the increasing of the cost in animal feeding and farm infrastructure (Lopes & Magalhães, 2005). The needing and interest of sheep farmers in increasing production scales made a huge pressure to get more knowledge in lamb finishing, taking into account the productive, economic and sustainability aspects.



The feedlot system may fulfill some of these features being a possible alternative to finishing animals faster. Nevertheless the upsurge in productive regulatory controls together with human health concerns about the use of antibiotics and chemicals in food products, arouses the needs to study new methods of maintaining the efficiency of modern animal husbandry. In this context, it can be mentioned animal supplementation with essential oils. Which aim to successfully modulate rumen fermentation, in an attempt to verify improvements in carcass traits and lamb meat quality. It is based so the reasons for seeking new management strategies, guarantors of a better quality of the final product to consumers. However, those studies are scarce and sometimes contradictory.

Therefore, this study aims to evaluate the composition of meat from lambs supplemented with different levels of a mixture of oregano, sage and chilli pepper essential oils.

Material e Methods

The field experiment was conducted at Ovine Production Laboratory at Federal Institute Farroupilha Campus Alegrete - RS, during the period from November 2011 to January 2012. It was accomplished using 40 contemporary non castrated male lambs, from Texel breed, kept on native pasture until the beginning of the feedlot system assessment. After weaning, which occurred about 60 days after birth, lambs were finished in feedlot, in individual pens provided drinking water and feeding. Experimental diet offered to animals was similar for all treatments. In its preparation it was used corn silage (*Zea mays*), soybean (*Glycine max*), ground corn and limestone. The ratio used between the roughage and concentrated fractions was 50:50. The treatments consisted of supplementation in different levels of a mixture of oregano (*Origanum vulgare*), sage (*Salvia officinalis* L.) and chili pepper (*Capsicum frutescens*) essential oils (MEO) in the following concentrations: Group 1 - negative control without supplementation of MEO ; Group 2 – 50 mg MEO; Group 3 – 100 mg of MEO; Group 4 – 150 mg of MEO; Group 5 - 200 mg of MEO. Therefore, the essential oils were mixed in equal volumes (1:1:1) and immediately placed in cyclodextrin capsules. The capsules were kept frozen until the time of use. MEO were provided by Mycotoxicologic Research Laboratory of the Federal University of Santa Maria (LAPEMI-UFSM). When animals reached the target body weight, the lambs were slaughtered following the Brazilian sanitary rules. The meat samples were taken from the *Longissimus dorsi* muscle between the 6th to the 12th ribs to determine the chemical composition. The meat composition analysis of humidity and total lipids were conducted at Meat Science and Technology Laboratory of Embrapa South Livestock (Bagé). The organic matter, ash and protein analyzes were determined by the Integrated Center for Development in Analysis Laboratory - NIDAL at the Federal University of Santa Maria - RS. The meat protein content was determined by the Kjeldahl method (AOAC, 1995), expressed as a percentage in the brute matter. The moisture content was determined by drying at 105°C for 24 hours and mineral matter for incineration in a muffle furnace at 550°C for two hours (Silva & Queiroz, 2002). The humidity determination was achieved through of preparing 20 g of grinded meat sample and placed in a specific filter bag. Then the samples were dried in air forced stove at 105°C during 3 hours. After the processing the sample were weighted and estimated the humidity percentage. The lipids were extracted using the ANKON XT-20 Fat Analyzer methodology, as preconized by 60 minutes using petroleum ether with nitrogen pressure. The study was set in a completely randomized design, where the lambs were the experimental units and treatments were the levels of supplementation with the mixture of essential oils was used. The data was analysed by regression analysis using the SAS System® software (SAS Inst. Inc., Cary, NC) at a significance level of 5%.

Results and Discussion

The knowledge of the meat chemical composition has special relevance in food produced for humans. Due to numerous reasons, including its influence on technological, hygienic and sensorial traits of lamb meat.

Thus, in Table 1 shows the results of the chemical composition of *Longissimus dorsi* muscle of lambs supplemented with essential oils.

Table 1. Chemical composition of *Longissimus dorsi* muscle of lambs supplemented with different levels of essential oils.

Variable	Levels of essential oils supplementation
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	0 mg	50 mg	100 mg	150 mg	200 mg	F	Pr>F	CV%
Humidity (%)	72.95	73.02	73.96	73.33	73.36	2.52	0.731	0.96
Organic matter (%)	93.92	92.89	91.98	92.74	93.02	0.87	0.929	3.87
Ashes (%)	1.68	1.75	1.58	1.71	1.73	0.45	0.168	6.34
Protein (%)	19.30	18.83	18.75	19.91	19.04	1.99	0.191	2.54
Total lipids (%)	3.40	3.28	3.12	3.12	3.03	0.72	0.319	15.66

F = ratio model-error; Pr>F = Probability greater than F; CV = variation coefficient

In this study, the mixture of essential oils used as a food supplement to animals, showed no influence ($P<0.05$) on moisture, organic matter, ash, protein and total lipids levels of lamb meat. The total lipid values found in the *Longissimus dorsi* muscle of this study were similar to those observed by Costa et al. (2009) which assessed this trait in Dorper lambs, Santa Ines and their crosses created in different finishing systems. On protein and ash percentages, the results do not differ from those observed by Wommer (2013). In contrast, Pellegrin (2012) reported slightly lower values of protein, 17.98; 18.11; 18.39 and 18.42 and ashes 1.09; 1.18; 1.30 and 1.41 when evaluating lambs pasture fed, supplemented with crude glycerin in creep feeding.

Conclusions

A blend of oregano, sage and chilli pepper essential oils in a daily supplementation levels up to 200 mg, encapsulated and given orally, did not change the composition of lamb meat of Texel breed.

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