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Zootecnia: Otimizando Recursos e Potencialidades

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Características sensoriais da carne de cordeiros suplementados com óleos essenciais¹

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Resumo: O objetivo do trabalho foi avaliar as características sensoriais da carne de cordeiros suplementados com mistura de óleos essenciais de orégano, sálvia e pimenta malagueta. Utilizou-se 40 cordeiros machos não castrados, Texel, distribuídos aleatoriamente em cinco grupos experimentais de acordo com os níveis de suplementação diária com óleos essenciais: 0 mg, 50 mg, 100 mg, 150 mg e 200 mg. Após abate, foram coletadas amostras do músculo *Longissimus dorsi*, para posteriores análises. A avaliação do perfil sensorial da carne de cordeiros foi realizada no Laboratório de Ciência e Tecnologia Carnes da Embrapa Pecuária Sul através de equipe de julgadores. As amostras foram servidas de forma sequencial e em cabines individuais, por escala não estruturada de 9cm, ancorada nos extremos com os termos correspondentes às intensidades mínimas e máximas para atributos cor; aroma característico e estranho; sabor: característico, fígado, metálico, ranço, especiarias e ácido; percepção de gordura; maciez e suculência. Os dados foram analisados segundo software SAS System[®] com significância de 5%. Os óleos essenciais nas concentrações utilizadas, não ocasionaram alterações significativas no sabor, cor e aroma das carnes avaliadas, capazes de prejudicarem os atributos, de modo a depreciar a carne ovina. Assim, a suplementação diária de animais com a mistura de óleos essenciais em até 200 mg, pode ser utilizada sem causar modificações nas características sensoriais da carne ovina.

Palavras-chave: aroma, maciez, perfil sensorial, qualidade, sabor

Meat sensory traits of lambs supplemented with essential oils

Abstract: The aim was to evaluate the meat sensory traits of lambs supplemented with a mixture of oregano, sage and chilli pepper essential oil. Were used 40 non castrated males, Texel, distributed randomly into five groups, according to daily supplementation levels with the essential oil 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. Samples were collected from *Longissimus dorsi* muscle, for subsequent analysis. The sensory profile assessment of lamb meat was held on Meat Science and Technology Laboratory at Embrapa South Livestock (Bagé) by assessors. Samples were evaluated through 9cm unstructured scale, anchored at the ends with the corresponding minimum and maximum intensities terms for the attributes: color; characteristic and off aroma; characteristic, liver, metallic, rancid, spices and acid flavor; fat perception; tenderness and juiciness. Data were regression analyzed using the SAS System[®] software at a significance of 5%. The mixture of essential oils used in the studied concentrations did not cause significant changes in flavor, color and aroma of meats assessed which could be capable of damaging the sensory lamb meat attributes. Thus, daily supplementation of animals with the essential oils up to 200mg can be used without to cause changes in sensory meat lamb traits.

Keywords: aroma, flavor, quality, sensory profile, tenderness

Introduction



The current consumer demands for chemical and/or biological safety in food products such as meat, arouses the need to develop new forms of production, supply and/or animal supplementation. However, new forms of supplementation and/or may culminate in interference in the sensory quality of the meat. Essential oils of some vegetables rich in carotenoids, plant extracts rich in phenols and other substances have been described as shelf life enlarger. Besides the antioxidant mechanisms which could contribute to the improvement of sensory characteristics of lamb of lamb meat as described by Lima Junior et al. (2013). The increasing concerns about human health, call attention to the use of antibiotics, chemicals and unsaturated fat, then it has pursued research in new ways to animal feed that leads to the final consumer a product with lower rates of antibiotics, chemicals unsaturated fatty acids. Therefore, this study aims to assess the sensory characteristics of lamb meat supplemented with a mixture of essential oils (MEO).

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. Sensory meat analyzes were performed on Meat Science and Technology Laboratory at Embrapa South Livestock (Bagé) through eight assessors which belonging to the trained assessors of that laboratory. The meat samples were taken from the *Longissimus dorsi* muscle and the analyzes were achieved following the methodology proposed by Meilgaard et al. (2007). The meat samples were prepared following the AMSA (1995). For the meat sensory profile evaluation, samples were served in sequence and in individual cabins. The assessors did the assessment through 9cm unstructured scale, anchored at the ends with the corresponding minimum and maximum intensities terms for the attributes: color; characteristic and off aroma; characteristic, liver, metallic, rancid, spices and acid flavor; fat perception; tenderness and juiciness. The descriptors attributes were obtained during training sessions with blind samples of the experimental lamb meat. The assessors were instructed to indicate with a vertical line under the scale, the point that best represented the perceived intensity of each trait for the different treatments evaluated. Sensory analyzes were performed by incomplete balanced block design, as described by Cochran & Cox (1992). The mathematical model used for this analysis was: $t = 5$; $k = 2$; $r = 4$; $b = 10$. Where: T = number of treatments, k = number of samples per dish, r = repetitions (number of animals per treatment) b = number of blocks (dish). Finally, the perceptions of the assessors were subjected to regression analysis using the SAS System® software (SAS Inst. Inc., Cary, NC) at a significance level of 5%.

Results and Discussion

Table 1 shows the results of the sensory analysis of the *Longissimus dorsi* muscle from Texel lambs, supplemented with different levels of essential oils, subjected to evaluation by trained team of judges.

Table 1. Sensory profile of *Longissimus dorsi* muscle from Texel lambs supplemented with different levels of essential

Variable	Levels of essential oils supplementation						F	Pr>F	CV(%)
	0 mg	50 mg	100 mg	150 mg	200 mg				
Color	5.340	4.243	3.343	3.684	4.159	1.48	0.415	94.14	
Aroma characteristic	5.565	5.503	5.268	5.262	4.612	0.64	0.520	32.93	
Off aroma	0.425	0.490	0.343	0.062	0.359	0.71	0.333	33.10	



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Characteristic Flavor	5.106	4.637	5.243	5.271	4.078	1.04	0.486	40.25
Liver Flavor	0.468	0.412	0.312	0.200	0.421	0.92	0.366	28.6
Metallic Flavor	1.115	0.681	0.728	0.765	1.012	0.97	0.866	73.26
Rancid Flavor	0.156	0.459	0.468	0.093	0.187	0.38	0.277	33.39
Spices Flavor	0.281	0.187	0.215	0.100	0.187	1.29	0.199	31.51
Acid Flavor	0.406	0.915	0.790	0.956	1.192	1.19	0.855	18.90
Fat perception	2.778	2.300	2.837	1.818	2.212	1.79	0.238	65.80
Tenderness	3.240	3.425	4.603	3.915	4.718	2.71	0.398	43.99
Juiciness	5.025	4.218	4.315	4.687	4.590	1.96	0.456	35.06

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

Taking a count of the antioxidant power of the used essential oils, differences were expected on the of the lamb meat sensory profile. However, no significant effect was observed in the studied lamb meat (Tab. 1).

Nieto et al. (2010) highlighted that among the sensory attributes, the most important for lamb meat are, flavor and aroma. Thus, those authors pointed out that when offered rosemary essential oil supplementation to lambs, the meat reached the highest levels of acceptability by consumers. They attributed these findings due to improvement in those attributes mentioned above at the time of inclusion of essential oils.

Conclusions

The essential oils used in concentrations did not cause any noticeable changes in lamb meat flavor, color and aroma. Thus, daily supplementation of lambs with the mixture of oregano, sage and chilli pepper essential oils up to 200 mg can be used without causing changes in sensory characteristics of lamb meat.

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