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It is a great honour to have been received the trust by the Mediterranean Federation of Health and Production of Ruminants (FeMeSPRum) to organize this XXII International Congress. In 1991 in Sardinia took place the first Federation's Congress, but this year for the first time it was held in Sassari at the Department of Veterinary Medicine.

Therefore, from 17 to 20 June the city of Sassari hosted the XXII International FeMeSPRum Congress and there was the opportunity for the participants to this event, to admire the architectural and cultural heritage.

This Congress was organized with the support of various public and private institutions,that have proven to be interested in the scientific development of the territory. During this Congress, several invited lectures have been organized, that raised the interest of participants for the value of the speakers and the importance of the topics covered.

Therefore, the reached great scientific level and the high number of participants, from different countries and continents highlight the interest in our Federation and in its events. Furthermore, the Congress was an important moment for humans contact between researchers that surely will arise in scientific collaborations that will grow our Federation.

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The technology of organic additive Fator P ® replaces the use of growth promoters in cattle feedlot diet with 90% of concentrate.

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Summary: The objective of this research was to evaluate the product Fator P® as an additive in diets for finishing beef cattle with high concentrate in substitution of virginiamycin. 42 Nellore bulls were divided in two treatments, where the only the difference was the additive used: Fator P® and virginiamycin. The diets had forage: concentrate ratio of 10:90, composed of corn silage, soybean hulls, cottonseed meal, ground corn and mineral premix with the additive Fator P® or virginiamycin. We evaluated the performance, carcass yield, the efficiency gain, economic analysis, and the conditions of the liver and rumen. The feedlot lasted 100 days. Means were compared by Tukey test (10%), using R with statistical program. The Fator P® provided the best carcass yield ($p < 0.057$) and was more cost effective to the producer € 9.01 by steer. There were no changes in the liver and rumen. The Fator P® can be used as additive in high grain diets to finishing cattle, improving the utilization efficiency of the diet and profitability of the feedlot and is environmentally friendly.

Introduction

The rumen ecosystem can vary depending on the diet and ruminal microorganisms. The use of growth promoters additives for selection of rumen micro-flora is a strategy to change the ruminal fermentation. The inhibition of the Gram + increases propionate production reducing methane production and promoting increased feed efficiency degradation.

The beneficial effect of the use of antibiotics as growth promoters in animal production is known to more than 60 years. The first work was done by Moore et al. (1946) and Jukes et al. (1950) and have proved the efficiency of these additives in the production rates of chicken and pork, respectively. Since then a number of studies have shown that the use of these additives improves feed efficiency, weight gain and reduced mortality. At the same time, studies with respect to antibiotic resistance were carried out. Starr and Reynolds (1951) reported in turkeys streptomycin resistance when used as growth promoters. Barnes (1958) the tetracycline resistance found in chickens when used as growth promoters. Since then the use of antibiotics as growth promoters is contested because of the potential of the presence of residues in food of animal origin and development of microbial resistance.

The use of antibiotics as growth promoters for livestock at dosages of 20 mg to 150 mg / kg food takes the rapid emergence of antibiotic resistant strains in the intestinal flora, that contains pathogenic bacteria such as Salmonella (Aarestrup et al., 1998). The structures of some growth promoters, such as avoparcin, virginiamycin and avilamycin, are similar to the latest generation of antibiotics structures developed for human use, vancomycin, pristinamycin and ziracina respectively. Bacteria resistant to these antibiotics were found in the gastrointestinal tract of poultry and pigs (Andreotti and Nicodemo, 2004). The livestock industry practices house extremely large populations of bacteria that are genetically communicate, providing an intense genetic selection pressure (Skold, 2000).

The strategy to reduce antibiotic resistance must therefore include substantial changes in antibiotic and growth promoters use in agricultural environments in order to preserve the utility of antibiotics in humans. Furthermore, the antibiotic resistance also limits the therapeutic effectiveness of antibiotics in animals.

The Food and Drug and Administration (FDA) in order to ensure the judicious use of antimicrobials, through Guidances for Industry (GFI # 209, 2012 and GFI # 213, 2013) guided the American industry to eliminate the use of antibiotics with purpose of growth promotion or feed efficiency enhancers producing animals; and ensure the therapeutic use of these antibiotics supervised. Classes of antibiotics include: aminoglycosides, lincosamides, macrolides, penicillins, sulfonamides, streptogramins, and tetracyclines.

Concerned about sustainable livestock production, Premix Company, developed the technology of organic additive Fator P ®, composed of amino acids, minerals, probiotics and essential fatty acids that promote digestion of fibrous, ruminal metabolism and absorption of nutrients. The results have shown that regular use of Fator P® has improved weight gain, ruminal parameters, fiber digestibility, reduce methane emissions, and improve immune response.

The objective of this research was to evaluate the product Fator P® as an additive in diets for finishing beef cattle with high concentrate in substitution of growth promoter virginiamycin.

Material and methods

The experiment was carried out at the Premix Company's research in Patrocinio Paulista, SP, Brazil, from July 22 to October 30, 2014, totaling 100 days of feedlot.

Were used 42 steers Nellore, contemporary, not castrated, 18 months old.In the experiment the beginning animals were divided in two groups according to weight and body shape, order to guarantee homogeneity of these, then randomized to treatment choice, which were respectively FP and VM. The animals were housed on lots respecting 20 square meters per animal. Before all these animals were receiving virginiamycin.

The diets had forage: concentrate ratio of 10:90, composed of corn silage, soybean hulls, cottonseed meal, ground corn and mineral premix. That differed the treatment was the use of Fator P® (FP) and the use of virginiamycin (VM) as an additive in the mineral premix. The diet was provided ad libitum. It were added according to manufacturer's recommendations. In the Table 1 was showed the participation of ingredients, physical and chemical characteristics of diet.

Table 1. Participation of ingredients, physical and chemical characteristics of diets.

Ingredients	%, Dry matter
Corn silage	10
Soybean hulls	13
Cottonseed meal	11
Ground corn	62
Mineral premix	4
Physical and chemical composition	
Dry matter, %	80.25
Crude protein, %	15.75
Neutral detergent fiber, %	27
Acid detergente fiber, %	17
Ether extract, %	1.8
No fiber carbohydrates, %	50
Total digestible nutrients, %	75.90
Effective fiber, %	10.75

The period of adaptation was 16 days. After adaptation period the animals were fasted of diets for 12 hours and then weighed to starting weight reference. Periodic weighings were taken every 28 days to performance evaluations with the same criteria of fasting.

The food was three times a day (7:30, 11:00 and 16:00). The diet was calculated according to NRC (2000) to attend the animal's nutritional requirements, aiming at an average daily weight gain of 1.2 kg/animal. The remains were taken each morning, with 10% tolerance. The diet provided and the remains were analyzed for control of nutrients consumed. The average dry matter intake was 10.21 kg.

The animals were slaughtered at a commercial slaugtherhouse. The conditions of the liver and rumen were observed. The carcass yield were performed according to body weight fasting on the day of slaughter. Was considered carcass yield of 52% for the beginning of the experiment.

For economic analysis of additives was considered the commercial values found in Brazil at November 25, 2014. The values form converted into euros for the same date (€=3,15 R$).

The design was completely randomized with two treatments and 21 repetitions . The treatment means were compared by the Tukey test, with 10% significance. The R program was used for statistical analysis.

Results and discussion

There was a significant statistical difference between the additives (P> 0.10) in initial weight, weight starting carcass and carcass yield, as shown in Table 2.

In the division of lots the average weight was 423.6 and 423.8 for FP and VM, respectively. After adaptation there was statistical difference (P <0.10) in initial weight. The rapid adaptation of VM to the diet with high concentrate may have influenced the initial weight, consequently the weight starting carcass too. Lanna and Medeiros (2007) evaluated the initial phase of a commercial feedlot animals fed with salinomycin and virginiamycin compared to treated with salinomycin. They observed a 10% increase in feed efficiency for the fed virginiamycin during the beginning of feedlot.

The characteristics of food intake have direct correlation with the size of the internal organs Veras et. al (2001). The used diet had 90% of concentrates and the animals were young. The weight gain can be considered low for some professionals, but the gain in daily carcass was very interesting result of reduced gastrointestinal contents combined with efficiency gains of animals.

Table 2. The Performance of Nellore steers confined with Fator P® compared with virginiamycin as an additive in the diet with 90% concentrated.

Parameters	FP	VM	Average	s.e.m.	P – Value
Start weight, Kg	426.8 B	436.6 A	431.71	2.66	0.06
Final weight, Kg	523.52	539.62	531.57	5.17	0.12
Gain weight, Kg	96.67	103.05	99.86	3.74	0.40
Gain weight daily, Kg	1.15	1.23	1.19	0.04	0.40
Weight starting carcass, Kg	221.96 B	227.01 A	224.49	1.38	0.06
Weight final carcass, Kg	299.10	301.93	300.51	3.29	0.67
Gain in carcass, Kg	77.13	74.91	76.02	2.82	0.72
Daily gain in carcass, Kg	0.92	0.89	0.90	0.03	072
Carcass yield, %	57.1 A	56.1 B	56.60	0.49	0.05
Gain efficiency in carcass, %	78.59	75.95	77.38	0.02	0.51

Tukey, 10%. FP = additive Fator P®, VM = additive virginiamycin. s.e.m. = standard error mean.

The steers supplemented with the additive Fator P® had 1% more in carcass yield that supplemented with virginiamycin. To Valadares Filho and Pina (2006) the diet is the main factor to influence the number and relative proportion of species of rumen microorganisms. Fermentative changes lead to changes in energy conversion, and in its use. The use of the additive Fator P® in cattle performance on pasture was evaluated Padua et al. (2003), which was used for protein supplement with or without Fator P®, four genetic groups. They found that animals fed the additive Fator P®, showed 26% increase in performance. Costa (2003) evaluated in situ ruminal metabolism Fator P® was evaluated by comparing the additive monensin and yeast. Noted that Fator P® showed significant differences favorable for degradation of dry matter and fiber compared monensin, which can be confirmed with the increased production of fatty acid acetic. Riveira et. al (2010) evaluated the effect of the use of monensin and Fator P® in ruminal metabolism. The FatorP® has the greatest total production of short chain fatty acids and increased production of ciliated protozoa compared with monensin. The additive Fator P® have amino acids, minerals, probiotics and essential fatty acids that modulate rumen fermentation. This can justifying the best performance.

There was no liver abscesses or deformities in the rumen and animal. Therefore both additive obtained positive effect of preventing the metabolic changes.

The difference between the diets was exclusively used the additive in the mineral premix, so it was done the economic analysis of these as shown in Table 3.

Table 3. Analysis of economic Fator P® compared virginiamycin as an additive in feedlot with 90% concentrated.

	FP	VM
Consumption mineral premix /steer / day, kg	0.47	0.47
Mineral premix cost, €/kg	0.56	0.62
Cost, €/steer/day	0.26	0.29
Diferencial, €/steer/day	0.03	
Diferencial, €/steer/100 days	3	
Differential gain in carcass, kg	2.22	
Added value in carcass, €	6.01	
Aggregate value using the Fator P®, €/steer	9.01	

FP = additive Fator P®, VM = additive virginiamycin. (25/11/2014).

It is observed that the Fator P® added € 8.8 per steer more than the additive virginiamycin, due to lower cost and better efficiency gain of the additive Fator P®. It is necessary to measure and evaluate the

use of available technologies to increase livestock productivity and economic indices. The Fator P® was cheaper and can improve the efficiency of cattle feedlot increasing the profitability of production.

Conclusion

The additive Fator P® can replace virginiamycin in high grain diets for finishing steers.

The additive Fator P® promoted better carcass yield that virginiamycin.

The additive Fator P® is most economically attractive and environmentally friendly that virginiamycin.

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