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# Effects of FECINOR PLUS on growth rates of calves and piglets<sup>1</sup>

F. Tortuero and J. Riopérez

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**SUMMARY** – The objective of this work was to evaluate the effects of the addition of FECINOR PLUS on growth rates. Regarding the effects on the growth rates of milking calves, the research involved 40 6-week-old male calves of the Frisian breed, distributed in two groups, CONTROL and FECINOR PLUS. The test duration was divided into two periods: from 6 weeks to 8 weeks of age of the animals during which a milk replacer was administered, and from 8 to 14 weeks during which the milk replacer was supplemented with an initiation feed. The addition of FECINOR PLUS to the diet ( $1 \times 10^9$  CFU/kg of feed) determined a 7.8% improvement in daily weight gain during the first test period, and 8.4% in the second. Feed efficiency was improved by 7.1% and 6.2% in the first and second periods, respectively. Regarding the effects on the growth rates of weaned pigs, 50 26-day old Large White x Landrace crossbreed, with an initial weight of 6.4 kg were used and randomly distributed in two groups, CONTROL and FECINOR PLUS. The trial lasted three weeks. The addition of FECINOR PLUS to piglets feed ( $1 \times 10^9$  CFU/kg of feed) resulted in a significant improvement in the daily weight gain (9.6%). This additive also had positive effects on the conversion index (6.4%).

**Key words:** *Enterococcus faecium*, growth rate, calves, piglets.

**RESUME** – "Effets de FECINOR PLUS sur les taux de croissance de veaux et porcelets". L'objectif de ce travail était d'évaluer les effets de l'addition de FECINOR PLUS sur les taux de croissance. Concernant les effets sur les taux de croissance de veaux en lactation, cette recherche a porté sur 40 veaux mâles de 6 semaines d'âge de race frisonne, distribués en deux groupes, Témoin et Fecinor Plus. La durée du test était divisée en deux périodes : de 6 à 8 semaines d'âge des animaux on a administré un lait de remplacement, et de 8 à 14 semaines, le lait de remplacement était supplémenté avec un aliment d'initiation. L'addition de Fecinor Plus au régime ( $1 \times 10^9$  CFU/kg d'aliment) a donné lieu à une amélioration de 7,8% du gain moyen quotidien pendant la première période du test, et de 8,4% pendant la seconde. L'efficacité alimentaire a été améliorée de 7,1% et 6,2% pour les première et seconde périodes, respectivement. Concernant les effets sur les taux de croissance des porcelets sevrés, on a utilisé 50 croisés Large White x Landrace de 26 jours d'âge, ayant un poids initial de 6,4 kg, que l'on a distribués au hasard en deux groupes, Témoin et Fecinor Plus. Le test a duré trois semaines. L'addition de Fecinor Plus à l'aliment des porcelets ( $1 \times 10^9$  CFU/kg d'aliment) a apporté une amélioration significative du GMQ (9,6%). Cet additif a également eu des effets positifs sur l'indice de conversion (6,4%).

**Mots-clés :** *Enterococcus faecium*, taux de croissance, veaux, porcelets.

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## Introduction

The use of microorganisms as additives in animal feeding has increased during the last years. Within the several microorganisms used, it has been shown that some *Enterococcus faecium* strains may have a positive effect upon growth and conversion rate in calves and piglets.

The objective of thi work was to evaluate the effects of the addition of FECINOR PLUS on growth rates (daily weight gain and conversion rate) of milking calves and weaned piglets.

## Effects on the growth rates of milking calves

### Materials and methods

The research involved 40 6-week old male calves of the Frisian breed with an average weight of 73 kg. For a week, the animals were accustomed to a change in food and stall conditions. The calves were identified by ear markers and assigned to two groups, CONTROL and FECINOR PLUS. The calves were

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<sup>1</sup> This work was carried out by Drs F. Tortuero and J. Riopérez at the former Instituto de Alimentación Animal, CSIC, and was presented by the Technical Department of Norel, S.A. Any correspondence related to this work should be sent to: Norel, S.A., Jesús Aprendiz 19, 1º A y B, 28007 Madrid (Spain).

distributed in the groups on the basis of the criterion of homogeneity of initial weight. The test duration was divided into two periods: the first period from 6 weeks to 8 weeks of age of the animals during which a milk replacer was administered, and the second period from 8 weeks to 14 weeks of age of the calves at which point the experimental test was concluded. During the second period, the milk replacer was supplemented with an initiation feed. The composition of the milk replacer and initiation feed used are specified in Table 1. FECINOR PLUS was added to the diet of FECINOR group at the recommended level of 0.1 g/kg, equivalent to  $1 \times 10^9$  CFU/kg of feed. The milk replacer was administered twice a day, and it was used at a temperature of 38-39°C. The results on weight gain and conversion rate were subjected to statistical data analysis by Student Test t.

## Results and discussions

The results on weight and feed efficiency in calves are shown in Table 1 and Fig. 1. The addition of FECINOR PLUS (*Enterococcus faecium* CECT 4515) to the diet, at a level of 0.1 g/kg, equivalent to  $1 \times 10^9$  CFU/kg, determined a 7.8% improvement in daily weight gain during the first test period, and an 8.4% improvement in the second period. Feed efficiency was improved by 7.1% and 6.2% in the first and second periods, respectively, in comparison to the control group. Differences were significant ( $p < 0.05$ ).

Table 1. Effects of addition of FECINOR PLUS to feed on weight gain and nutritive efficiency in calves

Growth parameters		CONTROL group	FECINOR group
Initial weight (kg)	Average	73.1 <sup>a</sup>	72.7 <sup>a</sup>
Final weight (kg)	Average	148.1 <sup>a</sup>	153.9 <sup>b</sup>
Weight gain (g/day), first period	Average	1,212.5 <sup>a</sup>	1,306.6 <sup>b</sup>
Weight gain (g/day), second period	Average	1,381.5 <sup>a</sup>	1,497 <sup>b</sup>
Conversion index, first period	Average	1.68 <sup>a</sup>	1.56 <sup>b</sup>
Conversion index, second period	Average	1.78 <sup>a</sup>	1.67 <sup>b</sup>

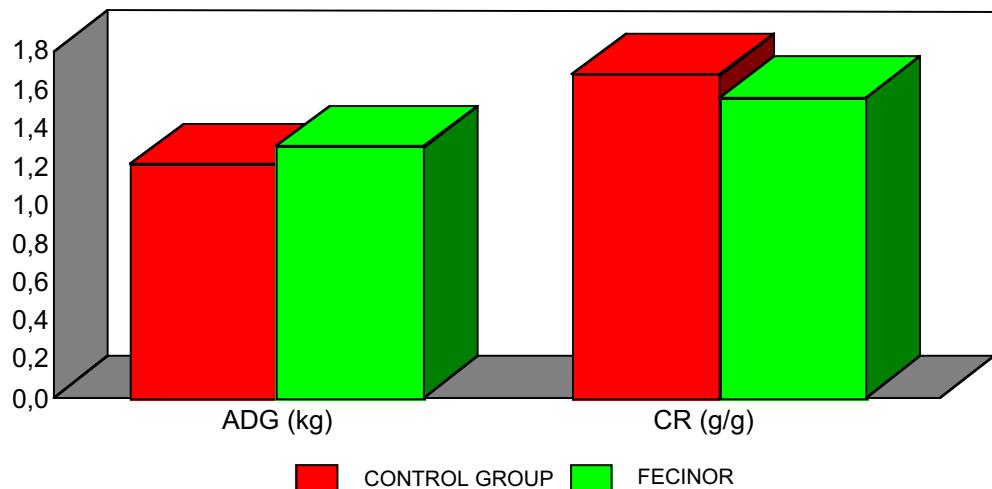


Fig. 1. Effect of addition of FECINOR PLUS to feed on weight gain and feed efficiency in calves.

## Effects of FECINOR PLUS on the growth rates of weaned pigs

### Material and methods

In this experiment, twenty-four 26-day old male and female pigs (50/50), Large White x Landrace crossbreed, with an initial weight of 6.4 kg were used. The pigs were identified by ear markers and

assigned to the CONTROL or FECINOR PLUS group, randomly distributed. The trial lasted three weeks. FECINOR PLUS was added to the FECINOR PLUS group feed in a level of 0.1 g/kg equivalent to  $1 \times 10^9$  CFU/kg of feed, the dose recommended for pigs. The composition of the basal diet used is specified in Table 2. The feed was administered *ad libitum* in meal form to the pigs using hoppers. In addition, water was made freely available to the animals through automatic teats. The results on weight gain and transformation rate for the test period were subjected to statistical data analysis by Student t test.

Table 2. Effects of addition of FECINOR PLUS to feed on weight gain and conversion index in piglets

Growth parameters		CONTROL group	FECINOR PLUS group
Initial weight (kg)	Average	6.35 <sup>a</sup>	6.32 <sup>a</sup>
Final weight (kg), Total test period	Average	11.05 <sup>a</sup>	11.47 <sup>a</sup>
Weight gain (g/day)	Average	223.8 <sup>a</sup>	245.3 <sup>b</sup>
Conversion index (kg/kg)	Average	1.85 <sup>a</sup>	1.73 <sup>b</sup>

\*Different letters in the same row (a, b) indicate significant differences ( $P < 0.05$ ).

## Results and discussion

The addition of FECINOR PLUS to piglets feed (Table 2 and Fig. 2) resulted in a significant improvement in the daily weight gain of these animals, i.e. 9.6%. The use of this additive also had positive effects on the conversion index, as a significant improvement of 6.4% was observed.

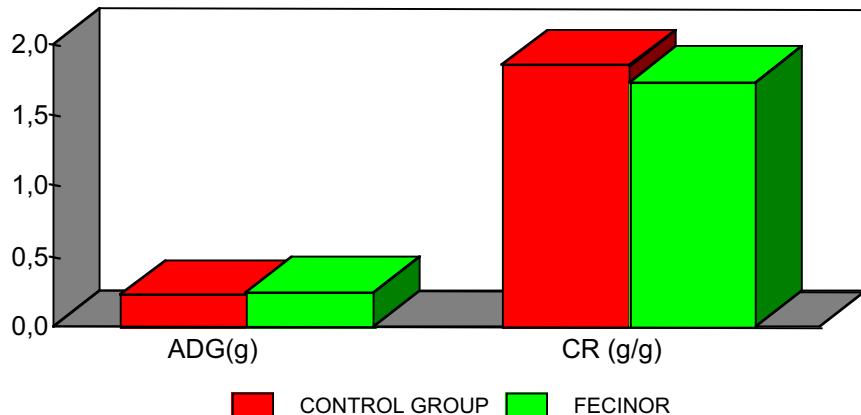


Fig. 2. Effect of addition of FECINOR PLUS to feed for piglets on weight gain and the feed efficiency.

## Conclusions

The addition of FECINOR PLUS (*Enterococcus faecium* CECT 4515, property of NOREL S.A.) improved significantly the Average Daily Gain (8.4%) and the Conversion Rate (6.2%) in the FECINOR PLUS group calves. In the piglets trial it improved significantly the Average Daily Gain (9.6%) and the Conversion Rate (6.4%) in the FECINOR PLUS group piglets trial, which shows the efficacy of FECINOR PLUS on the productive indexes of milking calves and weaned piglets.