

LACTO-SACC IN RABBIT NUTRITION

Gippert, T. - Virag, Gy. - Nagy, I.

Research Center for Animal Production and Nutrition
Gödöllő, Hungary

Abstract

The authors fed Lacto-Sacc preparation (1kg/ton feed) with young growing rabbits between the ages of 4 - 12 weeks in an experimental and commercial rabbitry. Lacto-Sacc marginally decreased mortality originating from digestive dysfunction, improved body weight gain by 3-6%, and feed utilization (in the commercial rabbitry) by 17%. It was established in a digestion experiment that Lacto-Sacc promoted the digestibility of the nutrients, particularly that of the protein.

Introduction

The efficiency and economy of rabbit production are endangered to a great extent by the appearance of digestive diseases post-weaning. Pathogenic bacteria proliferating in the intestinal canal, viruses, Eimeria species causing coccidiosis all play a role; but significant predisposing facts are nutritional disorders, especially the lack of crude fiber. According to certain observations, mortality originating from non-parasitic enteritis can be modified by administering lactic acid-producing bacteria. The implied mechanism is that Lactobacilli are able to produce lactic acid from carbohydrate and are resistant to acidity as a result, while acid is fatal to other bacteria (e.g., E. coli; Fuller, 1977; 1989).

Jensen (1979) fed "Lactiferm" (Streptococcus faecium M-74) to young rabbits immediately post-weaning. According to their observations the product improved the health status and body weight gain of the group. Masoero et al. (1980), similarly adding Streptococcus faecium, observed the post-weaning enteritis mortality decreased from 22.4 to 6.3%. Lacza and Gippert (1988) found that adding Streptococcus faecium to the diet reduced mortality by 50% and was associated with a 3% increase in body weight gain and a 2% improvement in feed utilization. Using "Paciflor" probiotic preparation, Vörös and Gippert (1991) noted reduced enteritis incidence in growing rabbits.

The Lacto-Sacc preparation contains microencapsulated lactic acid-producing bacteria, enzymes and yeast culture. According to the experiments by Rosell (1987), Lacto-Sacc improves health status, body weight gain and feed utilization of fattening rabbits. Henics (1990) fed Lacto-Sacc to breeding animals and noted a decrease in mortality of suckling rabbits along with higher weaning weights.

The objective of this study was an examination of health and performance of growing rabbits given diets containing Lacto-Sacc.

Materials and methods

Weanling New Zealand white rabbits in an experimental unit and in a commercial rabbitry were used in the feeding trials. At the experimental rabbit farm, 200 rabbits were allocated to control of Lacto-Sacc treatments with five replicates of 20 rabbits per treatment. At the commercial facility 172 rabbits were allocated to each treatment. All rabbits consumed a breeding ration of identical composition and nutritive value (DE, 11.3 MJ/kg; protein, 185 g/kg; crude fiber, 106 g/kg). The experiment was started at 4 weeks of age with Lacto-Sacc added to the ration fed does. Lacto-Sacc was added at 1 kg per ton of feed.

Lacto-Sacc (Alltech, Inc.) is a probiotic preparation containing three main biological components:

- 1) Microencapsulated bacteria
Streptococcus faecium and Lactobacillus acidophilus
- 2) Enzymes
Protease, amylase and cellulase
- 3) Yeast culture
Strain 1026

Additionally the ration contained "Lacti-form" (Streptococcus faecium M-74).

Weaning took place at six weeks of age. The experiment continued through ten weeks of age in the experimental farm and twelve weeks of age in the commercial rabbitry. Body weight, feed consumption and feed utilization were monitored. Health status was also monitored, and post mortem examination of all rabbits lost took place.

A metabolism experiment was completed to determine nutrient digestibility of both the control and Lacto-Sacc diets. This experiment used twelve week old NZW female rabbits, four collection periods were employed.

Results

At the experimental farm mortality was low as a result of ideal maintenance. There were no differences between the treatments in mortality (Table 1).

Less favorable conditions and the hot summer produced greater mortality in the commercial unit (Table 2). Most mortality was a result of enteritis with a smaller amount caused by respiratory disease. Lacto-Sacc reduced mortality by 4.1%. In both experiments, highest mortality occurred during the second and third week after weaning.

Lacto-Sacc improved body weight gain of the fattening rabbits by 8% at the experimental farm and by 3% at the commercial rabbitry (Tables 1 and 2). Lacto-Sacc improved feed utilization at the experimental farm only slightly, but

rabbits given Lacto-Sacc at the commercial unit converted feed 17% more efficiently. Apparent digestibility of protein was increased in diets containing Lacto-Sacc (Table 3).

Discussion

Lactic acid-producing bacteria play a significant role in the moderation of enteritis of domestic animals, as they hinder the development of pathogenic bacteria and promote growth and establishment of the normal flora (Grawford, 1979). In our experiment Lacto-Sacc did not decrease mortality to the extent observed in other trials, probably due to the presence of *S. faecium* in both control and Lacto-Sacc basal diets. The marginal decrease in enteritis can be explained in that the Lacto-Sacc additionally contains enzymes which promote the better digestion of nutrients after weaning. Decreasing accumulation of undigested nutrients reduces the danger of toxin formation in the digestive tract.

In our experiment the beneficial effect of Lacto-Sacc on production is primarily attributed to the enzyme and yeast culture content of the product. It is generally known that enzyme activity of young weanling rabbits is insufficient. Weanlings have difficulty digesting feed rich in carbohydrates and protein (Cheeke, 1988). The amylase, protease and cellulase content of the Lacto-Sacc promoted improved digestibility of the feed and consequently improved body weight gain and feed utilization. Patterns of weekly weight gain suggested that Lacto-Sacc played a significant role in the first stage of growth (4-9 weeks) when enzyme secretion of young rabbits was not sufficient. After this period there was no difference in the production parameters between the treatments. Lacto-Sacc is of primary benefit for suckling and weanling rabbits. Rabbits older than 9-10 weeks possess adequate enzyme secretion and have adapted to dietary carbohydrate.

References

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Table 1. Effect of Lacto-Sacc on performance and mortality of weanling rabbits (6 to 10 weeks) at an experimental farm

	Control	Lacto-Sacc
Starting number	100	100
Mortality number	8	8
%	8	8
Enteritis number	7	6
%	7	6
Body weight gain g/day	29.3	31.2
%	100	106
Feed consumption g/day	91.4	96.7
%	100	106
Feed utilization g/g	3.14	3.12
%	100	100

Table 2. Effect of Lacto-Sacc on performance and mortality of weanling rabbits (4 to 12 weeks) at a commercial rabbitry

	Control	Lacto-Sacc
Starting number	172	172
Mortality number	49	42
%	28.6	24.4
Enteritis number	28	24
%	16.3	14.0
Body weight gain g/day	28.7	29.5
%	100	103
Feed consumption g/day	110	92
%	100	84
Feed utilization g/g	3.79	3.14
%	100	83

Table 3. Effect of Lacto-Sacc on nutrient digestibility of diets fed rabbits

Digestive Coefficients	Control	Lacto-Sacc
Dry matter	76.53	77.42
Crude protein	82.39	85.12
Crude fiber	32.43	34.17
Crude fat	93.74	93.80
Nitrogen free extract	84.71	85.94