



**HAL**  
open science

# Effect of a probiotic on caecal microbial digestion in the pony

A de Vaux, Véronique Julliand

► **To cite this version:**

A de Vaux, Véronique Julliand. Effect of a probiotic on caecal microbial digestion in the pony. *Annales de zootechnie*, 1994, 43 (3), pp.259-259. hal-00888998

**HAL Id: hal-00888998**

**<https://hal.science/hal-00888998>**

Submitted on 11 May 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

## Effect of a probiotic on caecal microbial digestion in the pony

A de Vaux, V Julliand

Laboratoire Associé de Recherches Zootechniques INRA-ENSSAA, 26, bd Dr-Petitjean,  
21000 Dijon, France

Three adult male ponies caecally fistulated were fed a maintenance ration of a complete meal (89% dry matter, 16% cellulose, 15% crude protein) distributed at 8 am and 5 pm. The pellets were given alone during 1 month (D1), supplemented with 10 g (or  $10^{10}$  spores) of mature spores of *Bacillus* CIP 5832 (BCIP5832)/day/animal for 5 weeks (D2) and unsupplemented again for 1 month (D3). For each period, 4 samples of caecal content were collected from each animal on 4 different days before distribution of the diet. Total and proteolytic bacteria were counted anaerobically into roll-tubes respectively on complete and specific solid media adapted from those of Leedle and Hespell (1981). The number of cellulolytic bacteria was determined anaerobically on a liquid medium adapted from Halliwell and Bryant's medium (1953) and expressed as the most probable number. Volatile fatty acids, crude protein and  $\text{NNH}_3$  were measured by gas chromatography, Kjeldahl's adapted technique and Conway's technique, respectively. Hay and straw degradabilities were measured using the *in sacco* method.

There were no significant differences for biochemical parameters between the 3 periods. There

was no change in pH ( $7.0 \pm 0.2$ ;  $6.9 \pm 0.1$ ;  $6.7 \pm 0.2$  in D1, D2, D3), VFA level ( $57.1 \pm 13.4$ ;  $43.1 \pm 11.3$ ;  $57.3 \pm 9.3$  mmol/l), total nitrogen level ( $5.0 \pm 0.6$ ;  $4.7 \pm 0.5$ ;  $4.5 \pm 0.7$  g/100 g DM) and  $\text{NNH}_3$  ( $74 \pm 13$ ;  $88 \pm 20$ ;  $83 \pm 13$  mg/l). *In sacco* degradations showed no significant differences. The percentages of disappearance of DM ( $48.9 \pm 6.4$ ;  $43.4 \pm 5.1$ ;  $45.5 \pm 3.6$ ) and cellulose ( $35.9 \pm 10.2$ ;  $26.1 \pm 9.7$ ;  $29.3 \pm 7.4$ ) from hay, DM ( $24.4 \pm 4.9$ ;  $23.4 \pm 4.0$ ;  $23.1 \pm 2.9$ ) and cellulose ( $19.1 \pm 10.3$ ;  $17.7 \pm 8.7$ ;  $18.3 \pm 8.6$ ) from straw were similar. BCIP5832 increased the number of total and proteolytic caecal bacteria in 2 ponies but the means of the 3 animals were not significantly different. The probiotic had no significant effects on the cellulolytic flora of the 3 animals (fig 1).

In conclusion, BCIP5832 had no effects on cellulolytic activity but it could allow the host to increase nitrogenous nutrient availability.

Halliwell G, Bryant MP (1953) *J Gen Microbiol* 32, 441-448

Leedle JAZ, Hespell RB (1981) *Appl Environ Microbiol* 39, 709-719

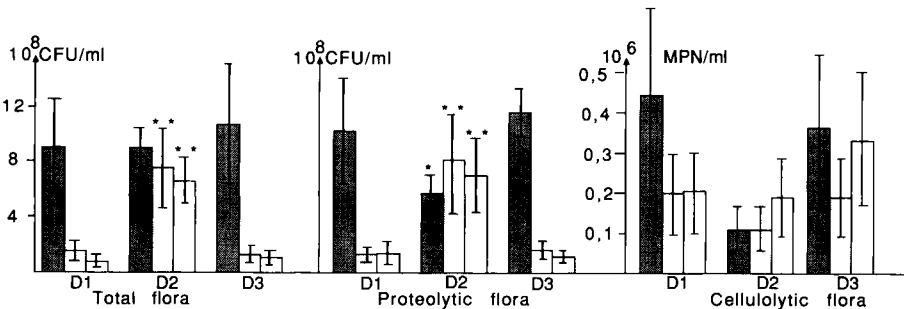


Fig 1. Counts of caecal bacterial populations. ■ Pony 1; ▨ Pony 2; □ Pony 3. \*  $p < 0.01$ ; \*\*  $p < 0.001$ .