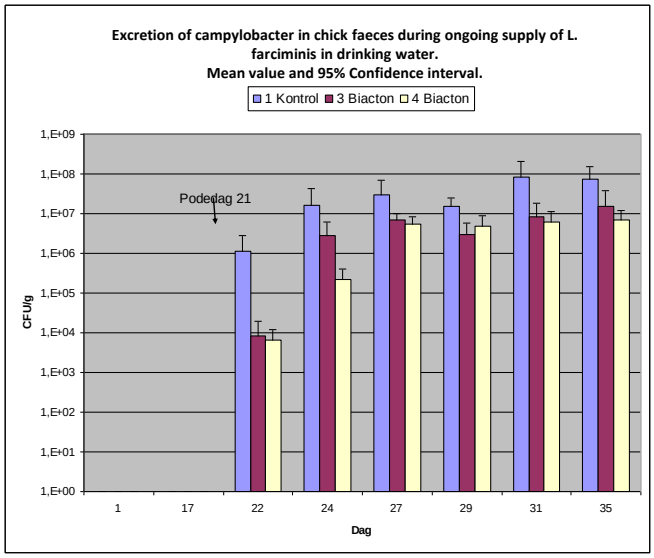
Report concerning effect of *Lactobacillus farciminis* (Biacton) against the presence of *Campylobacter jejuni* in faeces from broilers

The purpose of the study

The purpose of the project was to determine whether oral Biacton supplement could reduce the concentration of Campylobacter (*C. jejuni)* in chicks (faeces) from the 1st week of life through the 5th week of life at the time of slaughtering.

Description of the process

Biacton has been part of two experimental courses of studies. Study 1 in May/June 2008 and study 2 in Sept/Oct 2008.

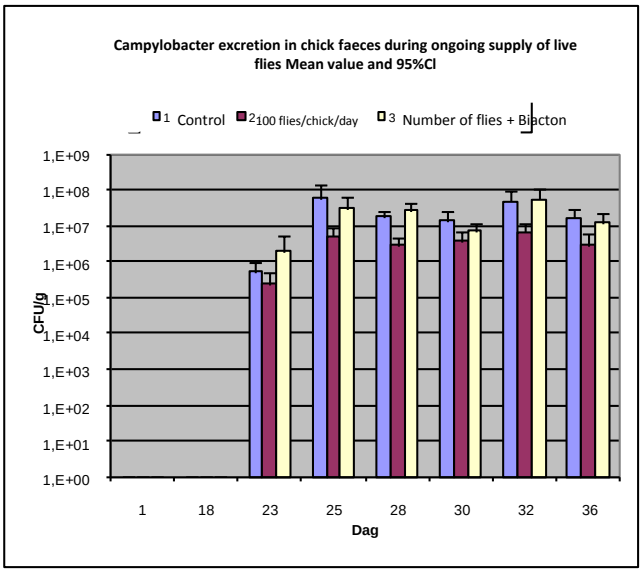


Study 1 Effect of Biacton included 3 groups of 8 chicks of which two groups received supplements of Biacton in drinking water from day 1, and a group served as a control group. This was carried out by use of non-coated Biacton mixed into D-glucose and suspended in drinking water at a concentration of 2.5 x 10^8 CFU L. farciminis MA 67-4R per liter of drinking water. On day 21, all three groups were infected with 1.5±0.1 x 10^6 CFU *C. jejuni* SC 181 per chick individually and orally through a tube. Afterwards, faeces samples were collected approx every second day during the rest of the period in order to check the excretion of Campylobacter.

The average of the control group's excretion of Cambylobacter was 3.7 x 10^7 CFU/gram faeces, whereas the average of the groups treated with Biacton was 4.9 x 10^6 CFU/gram faeces. This corresponds to an average reduction of the number of excreted Campylobacter of 86.6%. The results appear from the graph above.

The weight of the chicks on day 35: Control group: 1593g (standard deviation 204g), Group 3 Biacton: 1557g (standard deviation 178g), Group 4 Biacton: 1441g (standard deviation 168g)
Feed consumption: not measured

Conclusion concerning Biacton: please see the next page.



Study 2 Effect of flies combined with Biacton included 3 groups of 8 chicks. Two of the groups were supplied with fly pupae (100 per chick per day).
For one of these groups, Biacton/glucose were mixed into the hatching medium
Day
of the flies. The purpose was that the flies should absorb Biacton and thus have an L. farciminis microflora established in the intestine. However, the flies were hatching bad in the hatching medium into which Biacton/glucose were mixed (could the sugar have made the newly hatched fly stick?). The results at the graph on the right indicate that there was a reduction in the number of Campylobacter of 86% in the

group that had received and eaten 100 flies per chick per day. This is on par with the reduction when using Biacton in Study 1. Group 3 – which had received fewer flies and an unknown (smaller) number of lactobacilli, did not show any statistically reliable reduction (15%), but it is on par with the control group.
Concerning Biacton, nothing can be concluded for study 2. The study design should be changed in case of a repetition.
The weight of the chicks on day 35: Control group: 1910g (standard deviation 213g), Group 2 Biacton: 2101g (standard deviation 196g), Group 3 Biacton: 1984g (standard deviation 242g)
Feed consumption: I and Peter Arvé agreed that feed consumption was to be measured in this study. This has also been done by the poultry house. But it is not possible to state how much of the feed that has been eaten. The feed is delivered in the insulators on large trays and also serves as activity material for scrabing, dusting, etc. Totally, the control group was supplied with 84.0 kg of feed, and each of group 2 and 3 was supplied with 64.3 kg. No conclusion can be drawn regarding feed intake, but it is guessed that the difference is because the flies in group 2 and 3 have filled some of the need for activity by occupying the chicks making them scuttle around and catch flies during some of the time.
Conclusion regarding the effect of Biacton supplement for broilers in order to reduce the presence of Campylobacter in the intestine at the time of slaughtering:
In 2 groups of 8 chicks, supplement of non-coated Biacton in drinking water has shown a reducing effect on the number of Campylobacter in chick faeces. The average reduction from the 21st to 35th day of life was on a scale of barely 1 log unit (from ~10^7 to ~10^6CFU/gram faeces). Converting to real number of campylobacter, the reduction was 86.6% compared to the untreated group. It must be assumed that a similar effect can be achieved by feed addition of the coated Biacton. I consider Biacton to be an interesting product to proceed with in the efforts to find suitable substances/products as feed additives with reducing effect against Campylobacter in broilers.
As agreed, this report will be forwarded to Bent Andersen, ChemVet dk A/S, A.C. Illumsvej
6,
8600 Silkeborg. ChemVet DK A/S can use the results as stated in the cooperation agreement: ”Chemvet is entitled to use and convert the achieved knowledge immediately for production and development purposes, but is not allowed to publish the results until a scientific publication has been released unless this has been approved in writing by Birthe Hald, DTU Veterinærinstituttet (The Technical University of Denmark, the Veterinary Department).”
Later, the results will be included in the final report for the project “Risk perceptions, consumers’ behavior along with costs and benefits in relation to (optimal) intervention strategies for fight against Campylobacter." Project No. FFS05-1 Workpackage 1: ”WP1, Intervention studies in model systems” which is carried out with contributions by Direktoratet For FødevareErhverv, DFFE (the Directorate of Food Trade). The project manager (Birthe Hald) will enter the results and the scientific conclusion in the final project report for the Directorate of Food Trade (project end May 2009). Chemvet will receive a copy of the parts of the report in which the results for Biacton are included.

Århus, 18 Nov 2008

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