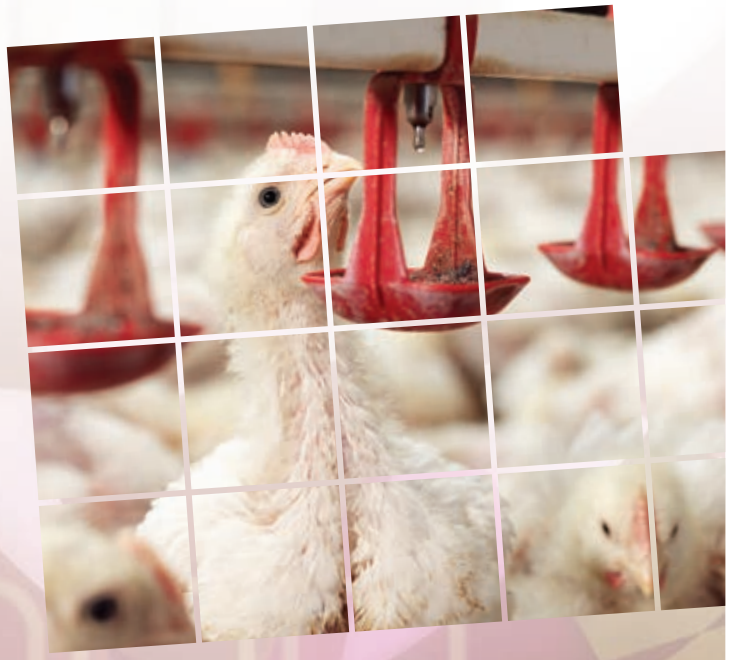
HUVEPHARMA®
We add performance to your business



B-Act®

Targeted protection

AgriHealth

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B-Act® is a probiotic feed additive consisting of viable spores of a unique *Bacillus licheniformis* strain (Strain Identification Number DSM 28710).

CHARACTERISTICS

Bacillus licheniformis is a Gram-positive, facultative anaerobic, spore-forming bacteria.

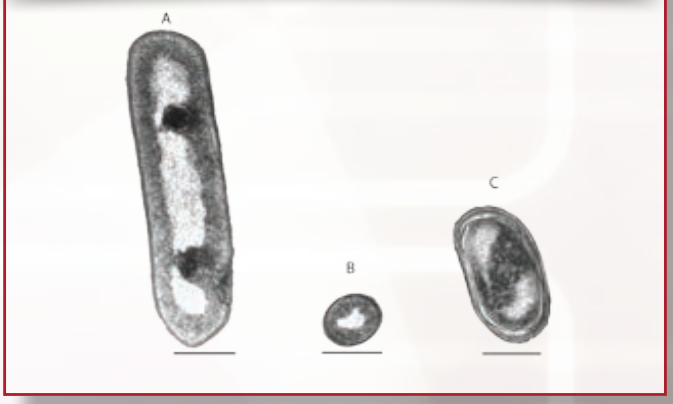
1. Spores and vegetative cells

The spores in B-Act® protect *Bacillus licheniformis*:
- Throughout feed production
- In the highly acidic upper digestive tract
- During enzymatic digestion

When the environment is favorable, the spores germinate into vegetative cells within minutes.

B-Act® can resist heat and high pressure, thus surviving the steam conditioning and pelleting process routinely used in the feed industry.

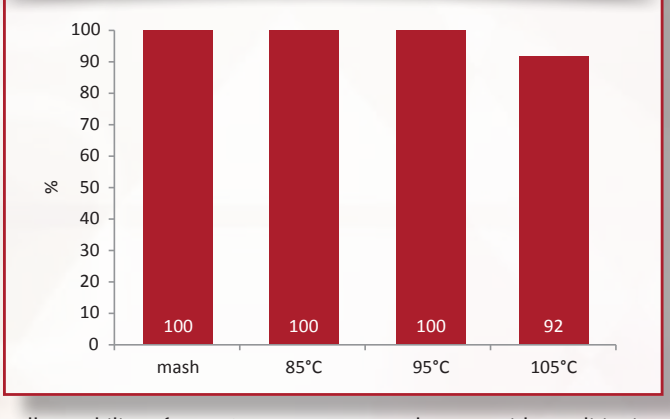
Spore of *Bacillus licheniformis*



Source: American Academy of Allergy, Asthma & Immunology

The vegetative bacterium is shown in longitudinal (A) and cross (B) sections. C, The dormant spore protected by several layers of highly cross-linked proteins and peptidoglycan. Bars indicate 0.5 µm.

Recovery rate



Pellet stability of B-Act® at 85°C, 95°C and 105°C with conditioning during 90s.

2. Aerobic and anaerobic

Most of the digestion and absorption of nutrients occurs in the small intestine where primarily aerobic organisms are found.

The vast majority of gut bacteria reside in the distal intestine. Due to the low oxygen pressure in this part of the gut, the numbers of anaerobic bacteria are prevailing.

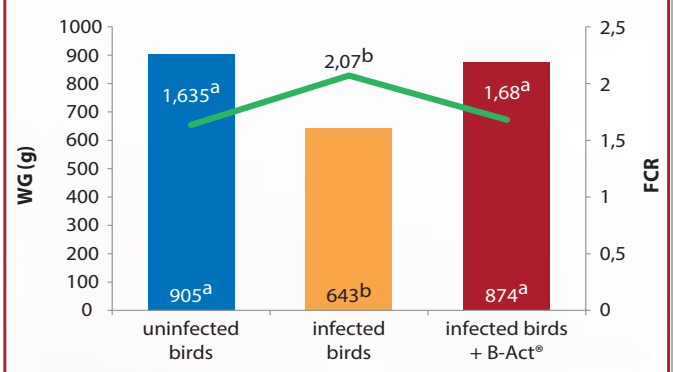
Due to the dual respiration possibility, aerobic and anaerobic, of *Bacillus licheniformis*, B-Act® exerts its positive effect throughout the whole intestinal tract.



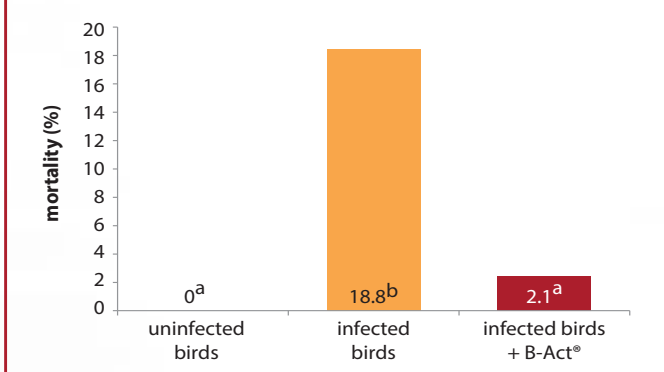
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HEALTH BENEFITS

1. B-Act® prevents enteric disease in the presence of *Clostridium perfringens*



Infected broilers supplemented with B-Act® show similar weight gain and FCR as uninfected birds.



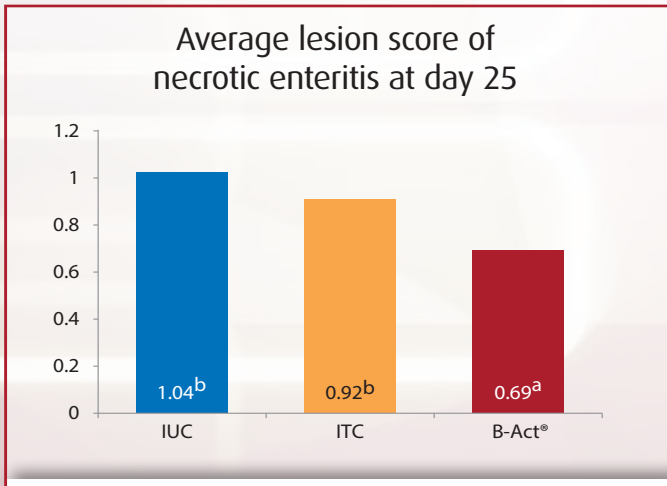
Infected broilers supplemented with B-Act® do not die of necrotic enteritis.

480 Cobb 500 broilers were inoculated with 5000 oocysts E.maxima/bird on day 13 and with 108 cfu Clostridium perfringens on day 18, 19 and 20 to artifically induce necrotic enteritis. One group of 240 infected birds were supplemented with 0.5 kg B-Act® (equivalent to 100g B-Act 100) / ton of feed from day 1. 240 broilers were not infected. Different letters mean significantly different at p,0.05.

Percentage broilers per necrotic enteritis score at day 25

GROUP	NE Score				
	0	1	2	3	4
Infected Untreated Control (IUC)	18	65	15	0	2
Infected Treated Control (ITC)	12	83	5	0	0
Infected + B-Act® (B-Act®)	31	69	0	0	0

Infected broilers supplemented with B-Act® show less necrotic enteritis lesions than antibiotic treated birds.



Infected broilers supplemented with B-Act® show less severe lesions than antibiotic treated birds.

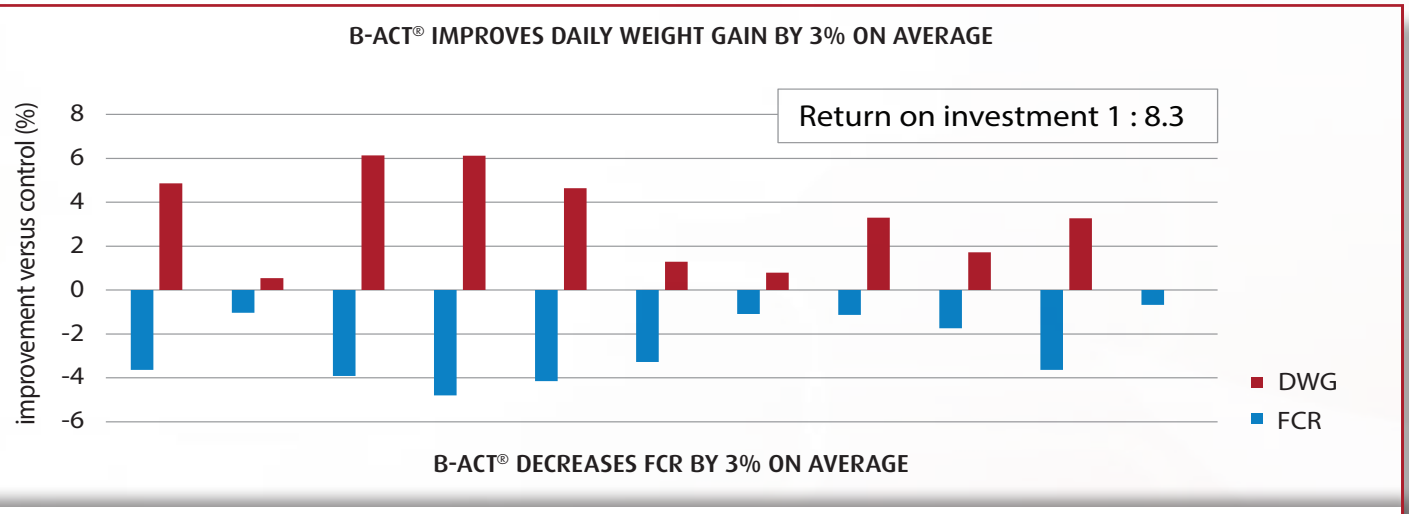
240 Ross 308 broilers were orally infected with 10^8 cfu *Clostridium perfringens* on day 19, 20, 21 and 22 and challenged orally with oocysts of E. maxima and E. acervulina on day 20. One group of 80 infected birds were supplemented with 2 kg B-Act® (equivalent to 400g B-Act 100) /ton of feed, another group was treated with amoxicillin in the water (20 mg/ kg bodyweight) from day 23. Different letters mean significantly different at p<0.05.

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ECONOMIC PERFORMANCE

2. B-Act® improves return on investment

B-Act® increases daily weight gain and improves feed efficiency by balancing the gut flora, decrease the number of harmful bacteria and thus improving the integrity of the gut.



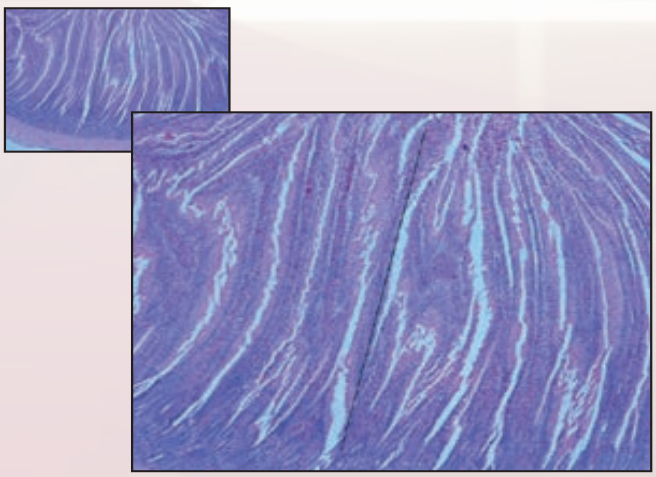
B-Act® improves DWG and FCR in broilers

Summary of 11 broilers trials conducted under commercial conditions worldwide
ROI based on 2.6 kg live weight at 42 days, cost of 275 €/ton feed, broiler price 1 €/kg.

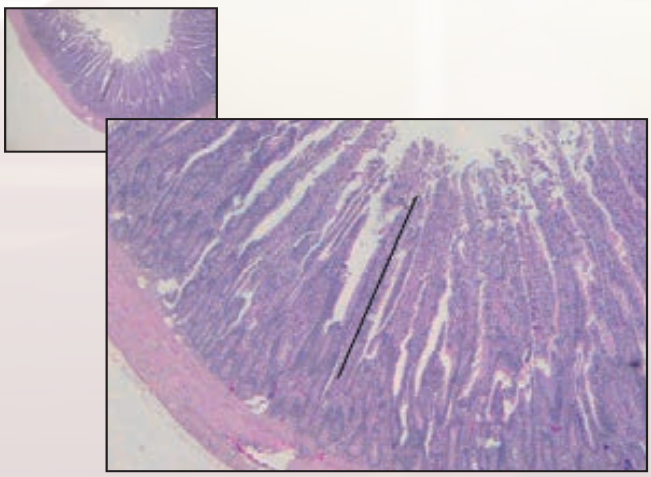
Small intestinal villi are increased when adding B-Act® to the diet making nutrient absorption in the gastrointestinal track more efficient.

B-Act® supplemented broilers show an increase of 13% in villi height in the duodenum versus the control group.

B-Act® broiler

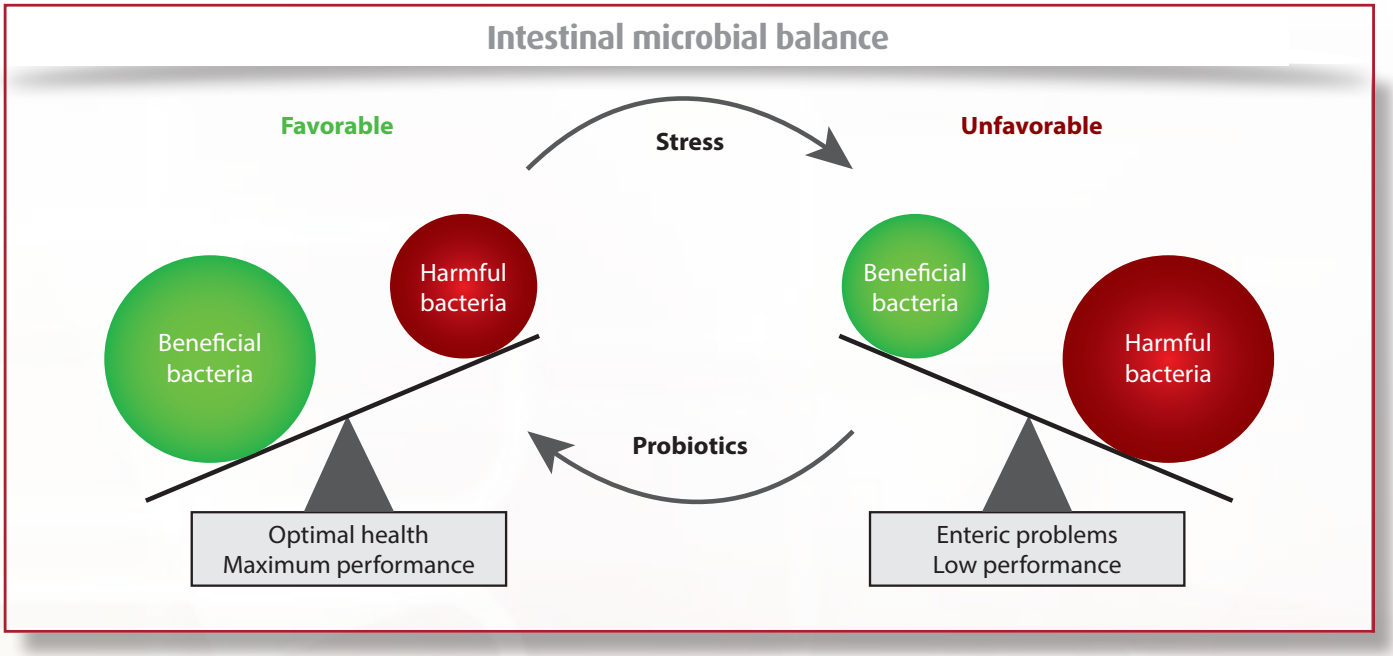


Control broiler



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MODE OF ACTION



Intestinal microbiota influences both the performance and health of the host. Stress (diet, management, climate, etc.) negatively affects the delicate balance of the microflora.

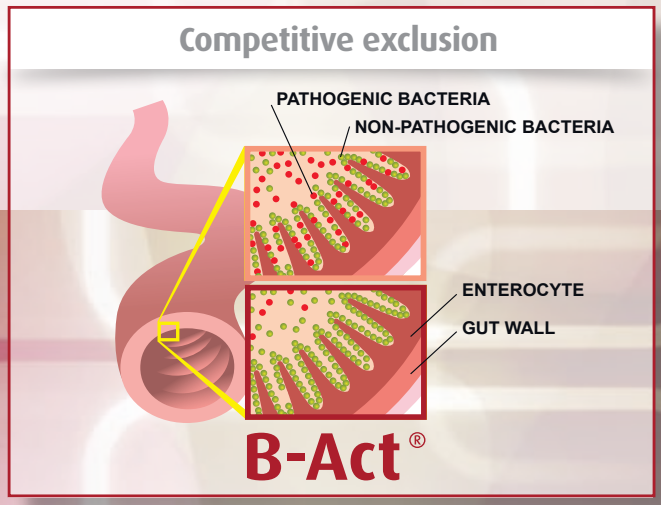
B-Act® establishes and maintains a beneficial microbial population in the gut by creating a favorable environment for beneficial bacteria by means of competitive exclusion and by direct antagonism against *Clostridium perfringens*.

1. Competitive exclusion

B-Act® colonizes intestinal mucosa, blocks the attachment and subsequent colonization by invading enteric pathogens through competition for nutrients and attachment site. This phenomenon is called competitive exclusion.

2. Lichenicidin

B-Act® produces the peptide lichenicidin, a bacteriocin selectively inhibiting the growth of *Clostridium perfringens*, the causative agent of necrotic enteritis.





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B-ACT®

INDICATIONS FOR USE

B-Act® should be used to:

- reduce the risk of necrotic enteritis
- to prevent enteric problems
- to boost performance

Species:

- newly hatched chicks
- broilers
- chickens reared for laying

Conclusion

B-Act® is:

- a probiotic feed additive
- consists of viable spores of *Bacillus licheniformis*
- prevents enteric disorders in the presence of *Clostridium perfringens*
- improves return on investment
- is extremely stable

DOSING

B-Act may be given prophylactically or therapeutically.

cfu *Bacillus licheniformis* /g B-Act 100	Recommended dose of B-Act 100 /mton of feed	cfu *Bacillus licheniformis* /mton of feed
1.6×10^{10}	100g	1.6×10^{12}

In stress situations 2 – 4 times the standard inclusion rate is recommended.

B-Act® is compatible with antibiotics, coccidiostats and other feed additives.

Packed in 20 kg bag. Shelf life: 24 months.

B-Act®

Targeted protection



References available on request.

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