B-Act®

Targeted protection



AgriHealth

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We add performance to your business

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

CHARACTERISTICS

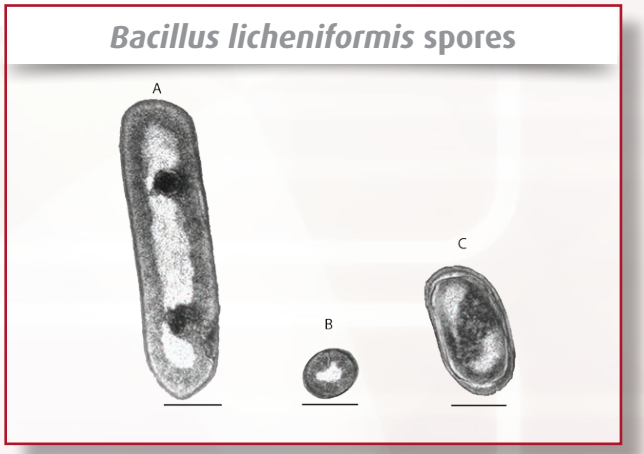
Bacillus licheniformis is a Gram-positive, facultative anaerobic, spore-forming bacteria.

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

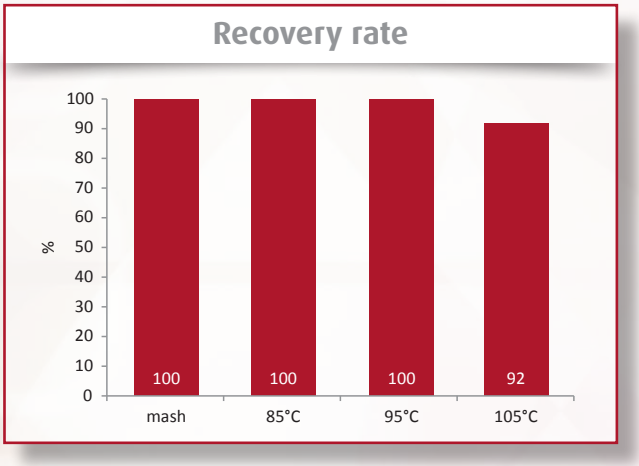
As soon as the environment is favourable, the spores germinate into vegetative cells within minutes.

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



Source: American Academy of Allergy, Asthma & Immunology

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



Pellet stability of B-Act® at 85°C, 95°C and 105°C (conditioning time: 90 seconds)

2. Aerobic and anaerobic

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

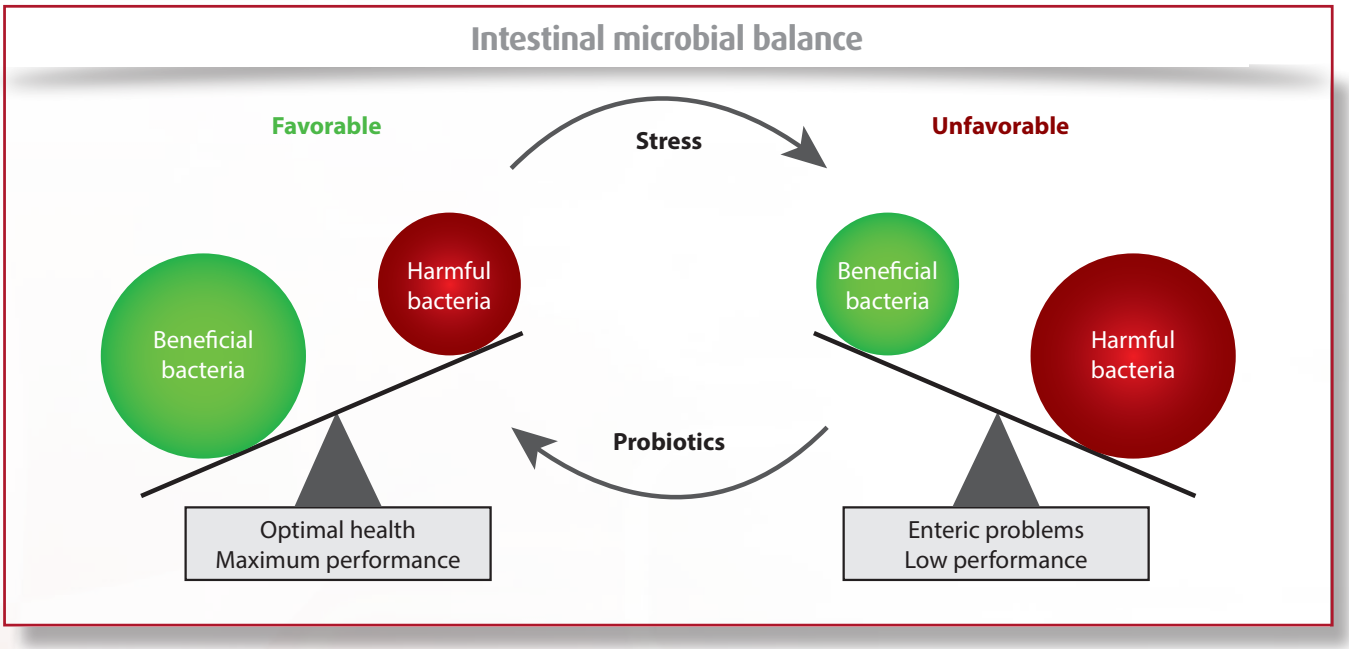
The vast majority of gut bacteria reside in the distal intestine. Due to the low oxygen pressure in this part of the gut, the numbers of anaerobic bacteria are prevailing.

As *Bacillus licheniformis* is capable of dual respiration (aerobic and anaerobic), B-Act® will exert its positive effect throughout the whole intestinal tract.



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MODE OF ACTION

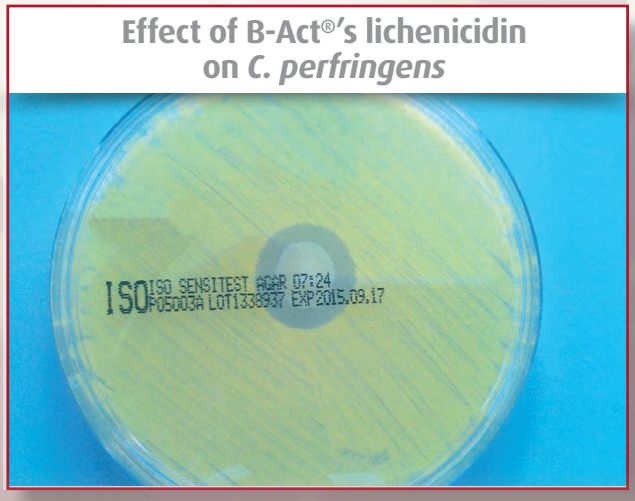


Intestinal microbiota influences both the performance and health of the host. Stress (diet, management, climate, etc.) negatively affects the delicate balance of the microflora.

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*.

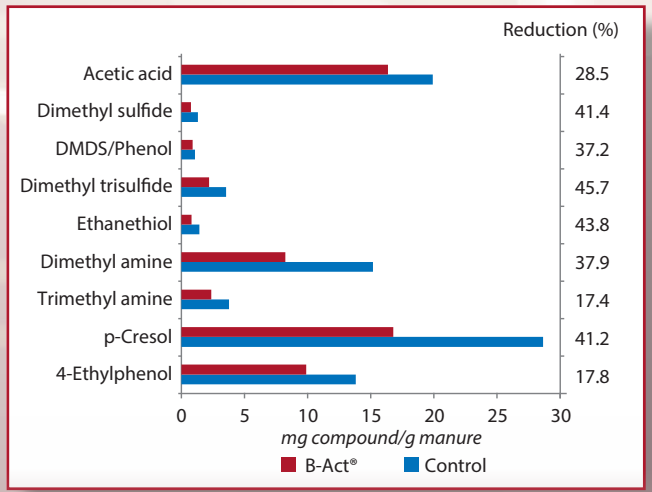
1. Competitive exclusion and lichenicidin

B-Act® restricts intestinal pathogens via competitive exclusion, including the production of antimicrobial compounds such as the peptide lichenicidin. This bacteriocin selectively inhibits the growth of pathogens such as *Clostridium perfringens*, an important agent in multiple gastrointestinal diseases.



2. Supporting gut functioning

B-Act® supports proper functioning of the gut by positively impacting digestion and microbial fermentation. This positive support is reflected in the reduction of odorous compounds in pig manure, achieved by adding B-Act® to the diet.



Odour causing compounds (in mg compound/g manure) found on manure of pigs fed a commercial diet or a diet containing B-Act® at 0.5 kg/mton (equivalent to 100g B-Act 100 / mton). The difference per compound between the two diets is indicated in the column on the right (%).

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SOWS & PIGLETS

1. Mother-child concept

Due to their natural rooting behaviour, piglets in the farrowing unit can ingest faecal matter from the sow, which often contain feed supplements originally added to the diet of the sow. As B-Act® is a stable spore-forming probiotic, it survives the maternal gastrointestinal tract and piglets can ingest significant amounts of B-Act® present in maternal faeces. Apart from supporting the sow, this indirect B-Act® supplementation thus also benefits the piglets.

B-Act® was supplemented to sows in a dosage of 3.2×10^{12} CFU *B. licheniformis*/mton of feed, from 17 days before farrowing until weaning, with piglets not having access to the treatment feed. Despite coming from a larger litter, piglets that ingested B-Act® from maternal faeces were able to achieve similar weaning body weights as the control (Table 1). As such, B-Act® supported the growing piglets via the mother-child concept.

Table 1	Control sows	B-Act® sows
CFU B-Act®/g **sow** faeces	$<10^2$	10^8
CFU B-Act®/g **piglet** faeces	$<10^2$	10^5
Weaned piglets	10^a	12^b
Litter weight at weaning (kg)	57.5^a	69.9^b
Piglet weight at weaning (kg)	5.75	5.82
Antibiotic use	6%	3%

2. Improved piglet performance

B-Act® supports piglets under challenging conditions, before and after weaning. Piglets experiencing enteric issues during the nursery stages often need to catch up to the standard in terms of performance, whilst enteric pathogens such as *Clostridium perfringens* pose an important challenge after weaning.

Keeping similar average starting body weights in mind, 392 weaned piglets were equally divided to create a control and a B-Act® group (Table 2). The latter was supplemented with 0.5 kg B-Act® (equivalent to 100g B-Act 100) /mton of feed, equal to 1.6×10^{12} *CFU B. licheniformis* / mnton of feed for a period of 42 days. Significant letters indicate significant differences at $P<0.05$.

Table 2	Control	B-Act®
Initial weight (kg)	6.2^a	6.2^a
Final weight (kg)	17.6^a	19^b
Average daily gain (kg)	0.269^a	0.297^b
FCR	1.52^a	1.53^a



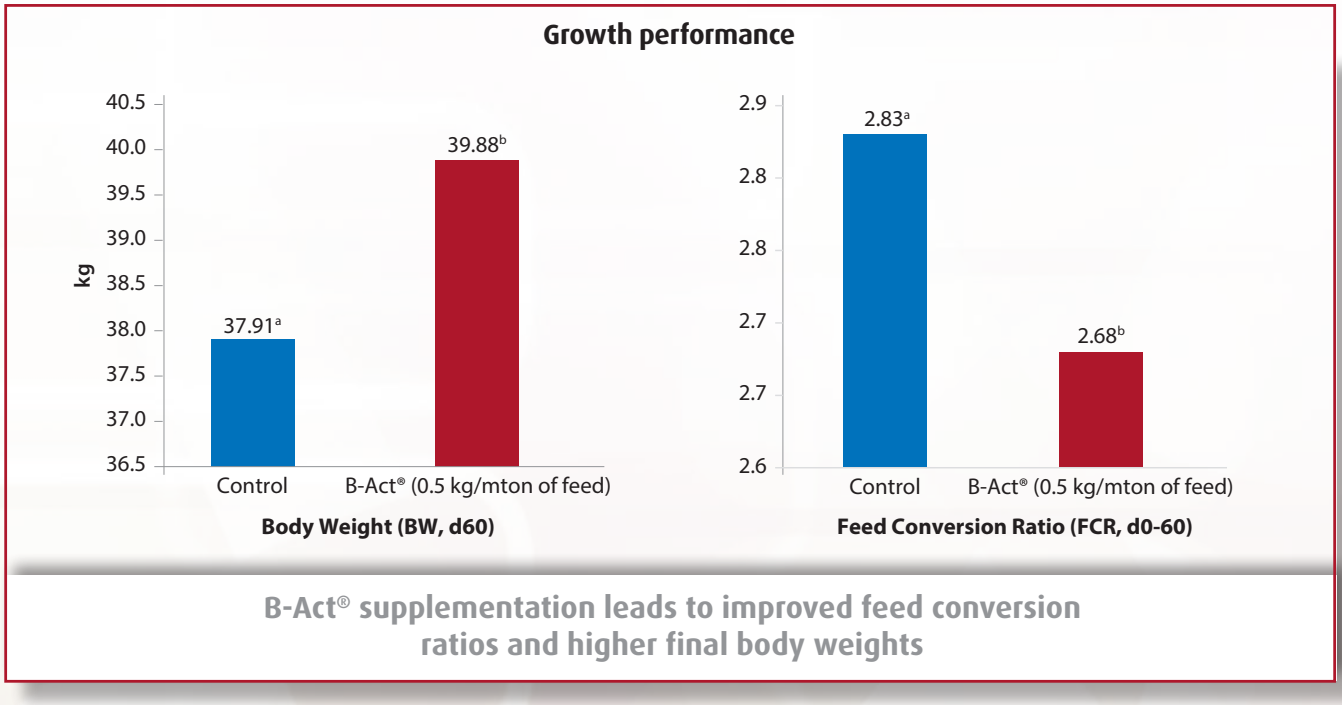
B-Act® supports growing piglets to reach their full production potential

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GROWERS & FATTENERS

B-Act® increases daily weight gain and improves feed efficiency by balancing the gut flora and decreasing the number of harmful bacteria, resulting in a more profitable production.

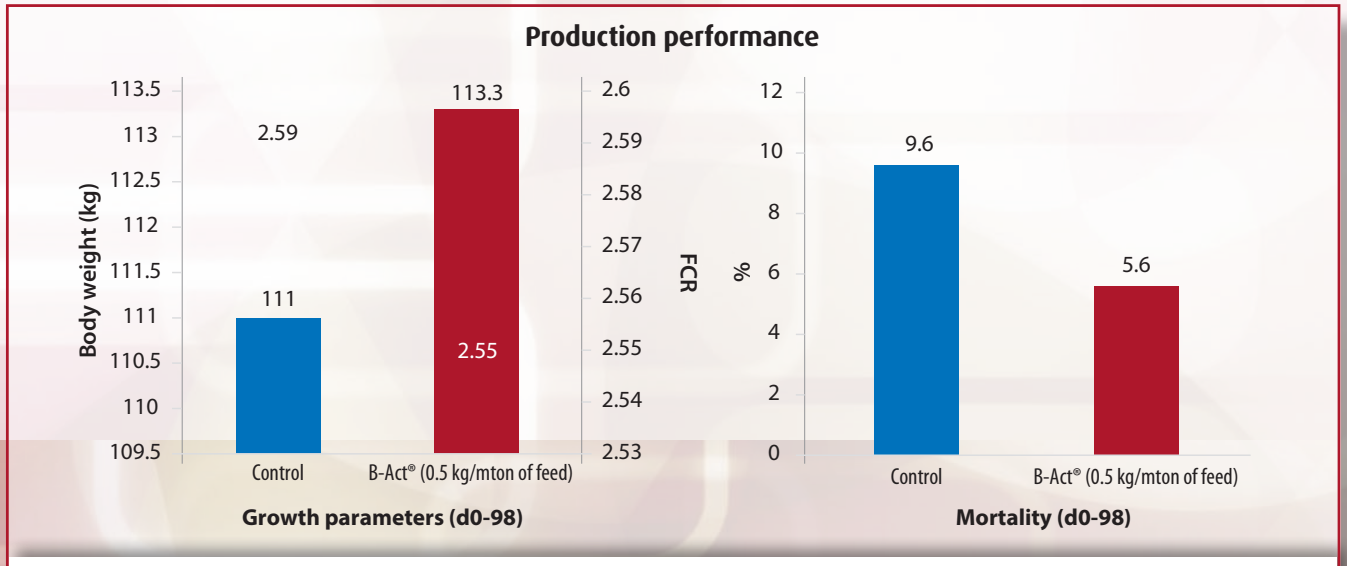
1. B-Act® improves technical performance parameters of growers



B-Act® supplementation leads to improved feed conversion ratios and higher final body weights

A group of 40 one month old pigs, with an average body weight of 9.12 kg, were divided in either a control or a B-Act® group. Each group had five replicates, with four animals per replicate. The control group was fed a standard basal diet, whilst the B-Act® group was fed the same basal diet supplemented with 0.5 kg B-Act® (equivalent to 100g B-Act 100) / mton of feed (1.6 x 10^{12} CFU *Bacillus licheniformis* / mton of feed). Trial duration: 60 days. Different letters indicate significant differences at P<0.05.

2. B-Act® improves performance and decreases mortality of fatteners



B-Act® delivers consistent positive results

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INDICATIONS FOR USE

B-Act® should be used to:

- reduce the risk of *Clostridium perfringens*
- to prevent enteric problems
- to boost performance

Species:

- Sows
- Piglets
- Growers
- Fatteners

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® should be given preventively.

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}

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

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

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