

Animal-byproduct Free Feed

Containing Active Bacterial Probiotics
(*Streptococcus faecalis*, *Clostridium butyricum*, *Bacillus mesentericus*),
Zinc and Oligosaccharide

Mixed Feed for Swine

BIO-THREE[®] PZ

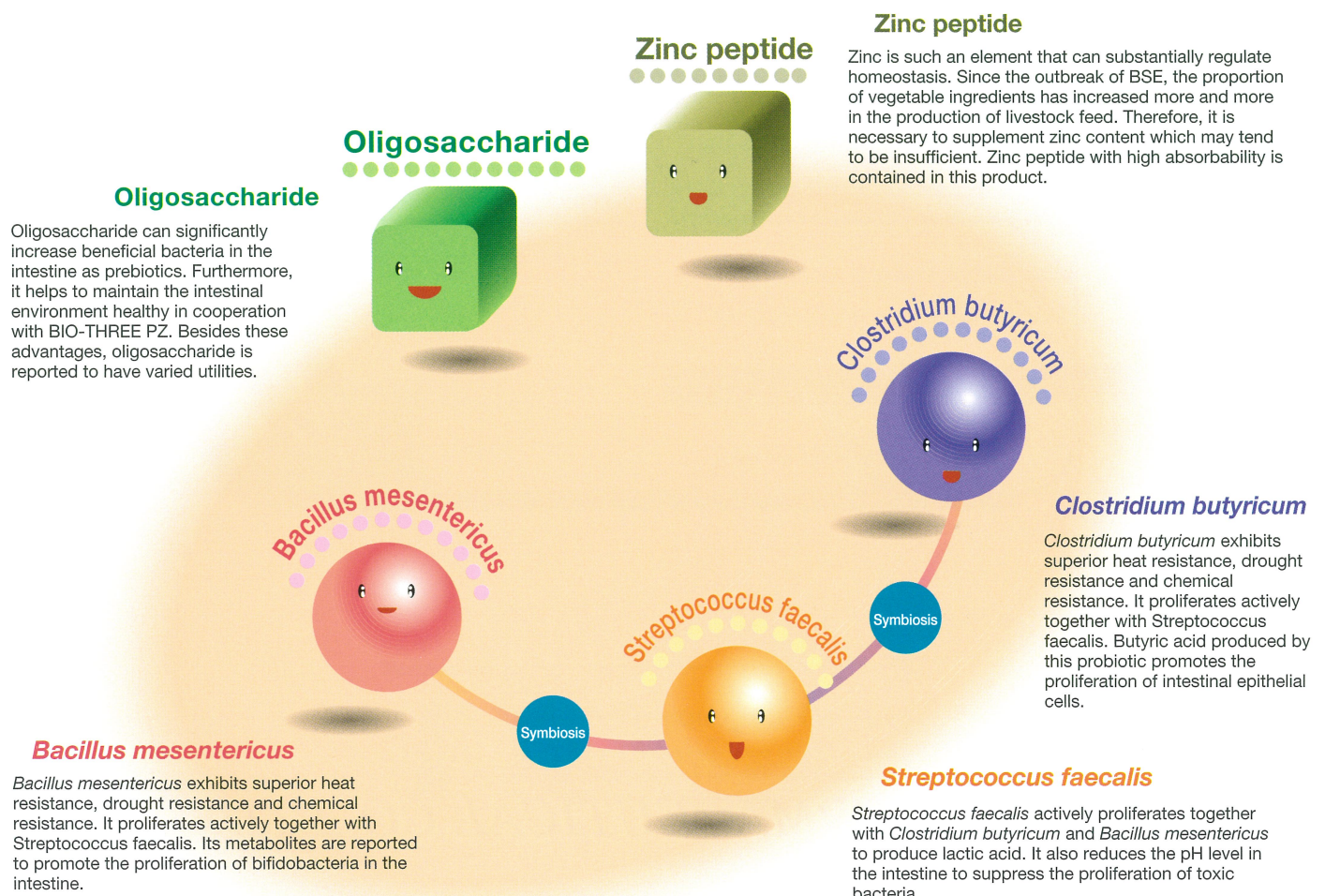


TOA PHARMACEUTICAL CO.,LTD.

BIO-THREE PZ is mixed feed for swine in which three kinds of beneficial bacterial probiotics (*Streptococcus faecalis*, *Clostridium butyricum* and *Bacillus mesentericus*) are mixed together with zinc peptide and galacto-oligosaccharide in a well-balanced manner. This product is best-suited to swine production.

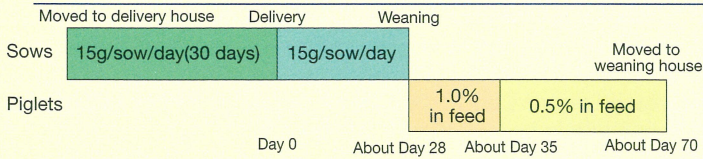
Advantages of **BIO-THREE PZ**

- Three kinds of active bacteria (BIO-THREE) are mixed as probiotics in BIO-THREE PZ.
- BIO-THREE PZ produces organic acids (butyric acid, acetic acid, lactic acid, etc.).
- Oligosaccharide is mixed together as prebiotics. Zinc, which is essential for swine reproduction and growth, is mixed in a form of zinc peptide superior in absorbability.
- Through the combination of probiotics and prebiotics, BIO-THREE PZ can make the intestinal flora be in a good condition, and protects your livestock from various stresses and toxic bacteria, contributing to enhanced farm outcome.



Experimental Results with BIO-THREE PZ

[Experiment 1] SPF swine farm: Diarrhea due to E. coli was often found.



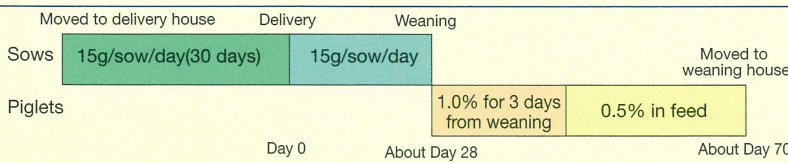
Fecal specimens were taken at Day 10, weaning time (Day 20 - 25) and Day 40 to determine VT, ST and LT levels. [Table 1]

* Edematosis-derived pathogenic E. coli-producing toxins

Table 1

	Day 10			During weaning			Day 40		
	VT	ST	LT	VT	ST	LT	VT	ST	LT
Control	0/3	0/3	0/3	0/3	0/3	0/3	3/3	2/3	3/3
Experimental	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3

[Experiment 2] SPF swine farm



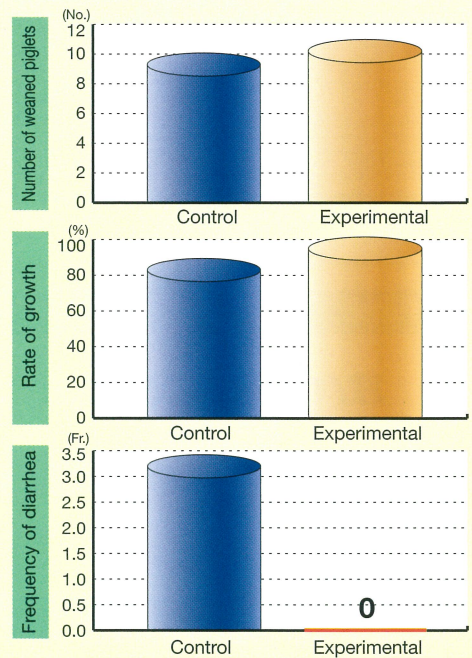
As for the number of weaned piglets per litter, mortality, the frequency of diarrhea and the rate of growth, the results in the experimental compartment were demonstrated to be significantly superior to those in the control compartment.

In addition, Salmonella was detected from four sow's fecal specimens taken at initiation of the study but not detected from their piglet's fecal specimens taken at the time of weaning.

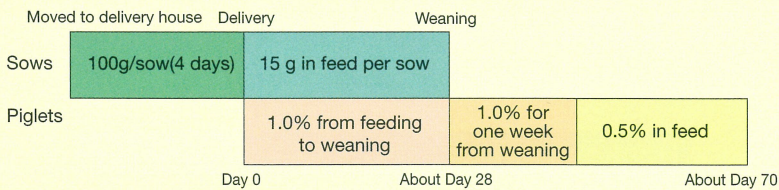
Table 2 During weaning

	n	Number of childbirth	Suckling times	No. of weaned piglets	Mortality ^{*1}	Diarrhea ^{*2}	Growth rate
Control	11	5.8	11.6	9.3	2.4	3.1	80.9
Experimental	19	5.8	11.3	10.2	0.6	0.0	92.0
t-test	NS	NS	NS	p<0.05	p<0.01	p<0.01	p<0.05

*1 Mortality: Average mortality per litter *2 Diarrhea: Average frequency of diarrhea per litter

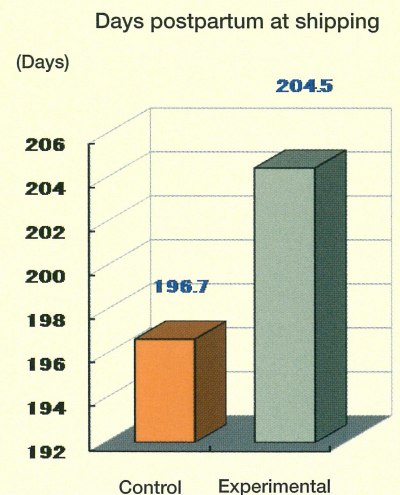
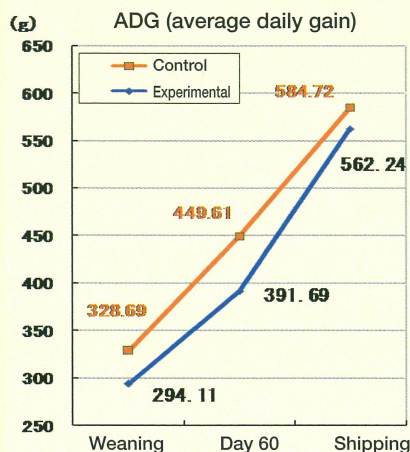
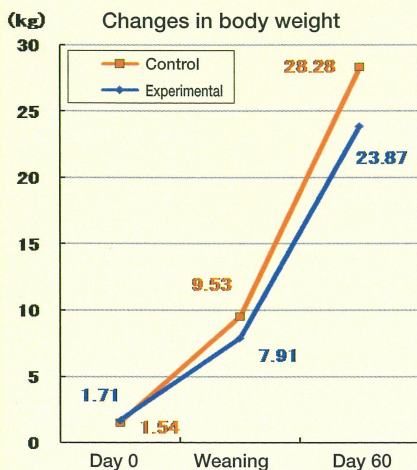


[Experiment 3] Swine farm Results of fattening program and its financial advantages when BIO-THREE PZ was fed to both sows and piglets



The body weights at the time of weaning and Day 60 increased significantly. The weight gain per day increased significantly from Day 60 to the day of shipping. The day postpartum at the time of shipping was shortened by 7.86 days on the average with a markedly decreased cost for feeding as well.

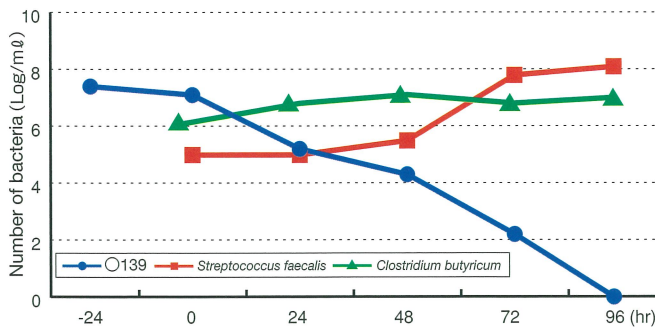
Table 3



Experimental Results with Probiotics

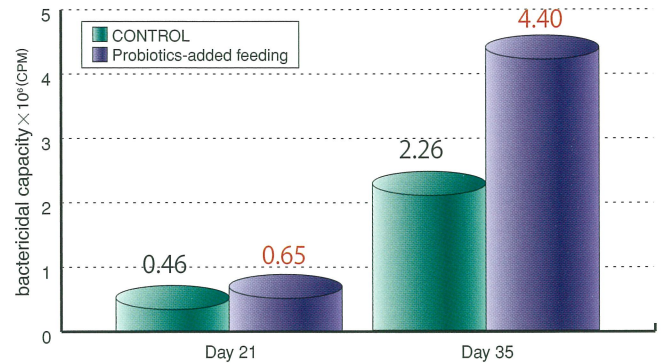
Suppression of porcine edematosis-derived E. coli by mixed culture of *Streptococcus faecalis* and *Clostridium butyricum*

After a pathogenic E. coli strain, O-139 was multiplied sufficiently by using a model of digestive tract followed by addition of *Streptococcus faecalis* and *Clostridium butyricum* for continuous cultivation. The proliferation of O-139 was rapidly suppressed below its detection limit within 96 hours thereafter.



Influence of probiotic-added feeding on the immunity capacity of weaned piglets

When probiotics (*Streptococcus faecalis*, *Clostridium butyricum* and *Bacillus mesentericus*)-added feeding was initiated in weaned piglets (Day 21–35), the neutrophil bactericidal capacity was found to have increased significantly.



Feed

BIO-THREE PZ

Kind of feed

Mixed feed for swine

Feed additive

Zinc peptide (Zn: 10,000mg/kg)

Raw materials

Streptococcus faecalis 1x10⁸/g
Clostridium butyricum 1x10⁶/g
Bacillus mesentericus 1x10⁶/g
 Galacto-oligosaccharide, Defatted rice bran
 zeolite, natural aluminum silicate, stevia extract

Dosage

The following quantities of BIO-THREE PZ are added to conventional swine feed as a standard.

Piglet (feeding initiation to Day 35): 1% in feed

Growing pig (Day 35 – 70): 0.2 – 0.5% in feed

Fattening pig (Day 70 – Shipping): 0.1 – 0.2% in feed

Sow: 0.1 – 0.2 % in feed

- Do not use this product for livestock excluding the specified one.
- Follow the designated amount of product for feeding.

Precautions on storage

Avoid high temperature and humidity.

Use immediately after unsealing the bag.

Package

20 kg kraft bag

Manufacturer



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