

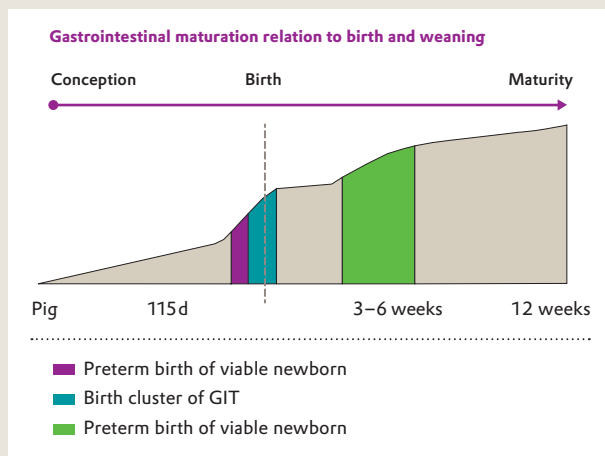
Ecobiol® in swine

The effect of *Bacillus amyloliquefaciens* CECT 5940 on the performance and gut health in swine

Ecobiol®

The development of the digestive system in swine

The development of the gut in the piglet begins before birth and once the piglet is born, the gut development relies heavily on the microbial populations and takes at least 12 weeks to fully develop. During this time there are a number of stressful situations the pig will experience, the most critical stage being weaning. This is due to the fact that weaning results in the most radical dietary change for the pig as the highly digestible nutrients that are present in milk are now replaced with less digestible dry feed. Combined with this, are the added effects of the low activities of the enzymes amylase, trypsin as well as low secretions of hydrochloric acid in the stomach. As a result, there will be an abundance of undigested fermentable substrates in the intestine causing *E. coli* numbers to increase and *Lactobacilli* populations to decrease.

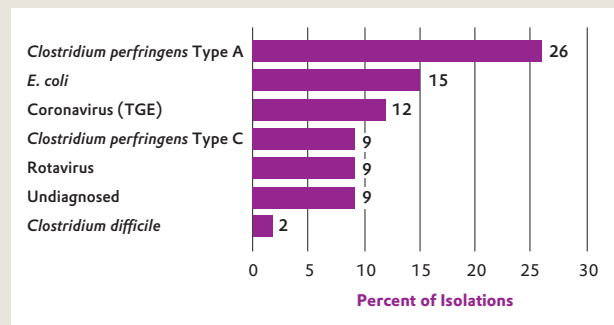


Exp Biol Med 231:1695-1711, 2006

Intestinal challenges during the life cycle of the modern pig

The modern pig in a commercial environment is never free of intestinal challenges and the days following weaning pose the biggest threat to the livelihood as well as growth and performance of the piglet. *E. coli* is one of the most important causes of post-weaning diarrhea in pigs, but *Clostridia*, Coronavirus responsible of Porcine Epidemic Diarrhea (PED) as well as TGE (Transmissible

Gastro-Enteritis), Coccidiosis, and Rotavirus are also abundant pathogens during the first 0-21 days post weaning. (See table below). Diarrhea is responsible for substantial economic losses due to mortality, decreased growth performance and increased cost of medication to treat these animals. The table below shows the most common pathologies for newly born piglets (first 5 days of age):



Galesburg, IL Diagnostic Laboratory, 2001

In gilts and sows, swine dysentery, proliferative enteropathy caused by *Lawsonia intracellularis* as well as *E. coli* and *Salmonella choleraesuis* bacterial infections are also of major concern to the swine producer, not only due to the decreased performance in the gilts and sows; but also because of the increased risk this poses to the neonatal piglets.

Due to the development of multiple bacterial resistance to a wide range of commonly used antibiotics and an increase in the pressure to ensure prudent use of such antibiotics in the future, the use of alternative measures will be a necessary component in improving gut health.

Pathogen inhibition of Ecobiol® (both *in vitro* and *in vivo*)

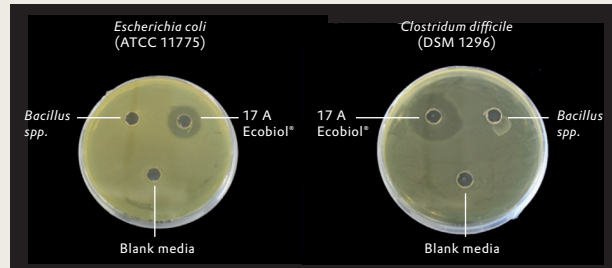
Bacillus amyloliquefaciens CECT 5940 is able to inhibit *E. coli* and *Clostridium difficile* *in vitro* through the following agar diffusion test (measured as the mm clearance of the pathogen):

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Agar diffusion test using strains grown in LB Kelly / Caso Yeast media (mm clearance of pathogen)

Straintested	<i>E. coli</i> ATCC11775	<i>C. difficile</i> DSM1296
<i>B. amyloliquefaciens</i> CECT 5940	18.80	26.8



Bacillus amyloliquefaciens CECT 5940 has also shown the ability to reduce the amount of *E. coli* present in the feces from sows that received supplementation of Ecobiol® 1 week prior to farrowing as well as through-

out lactation. Feces were collected 5 days before farrowing and again 28 days after supplementation with Ecobiol® began, and the following drastic reduction in *E. coli* count was noticed:

Sow number	<i>E. coli</i> numbers in the feces before and after Ecobiol® supplementation			
	23/01/2017	24/02/2017	REDUCTION	REMAINING
5761	2.00×10^7	2.40×10^6	-88.0%	12.0%
6146	1.10×10^7	2.40×10^6	-78.2%	21.8%
5761	2.00×10^7	6.00×10^5	-88.0%	12.0%
6146	1.10×10^7	3.60×10^5	-78.2%	21.8%
5871	2.40×10^7	1.80×10^7	-25.0%	75.0%
AVERAGE	2.18×10^7	4.75×10^6	-78.2%	21.8%

Ecobiol 500® – 500 g / MT of feed

Ecobiol® 500 can be used in all phases of pig production, including gilts, sows, post weaning pigs, growers as well as finishers to help control gut problems and maintain a healthy digestive system and gut microbiota. Certain statements may not be applicable in all geographical regions. Product labeling and associated claims may differ based upon government requirements.

Product names and or availability may vary by country.

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