

NO
GUTS

NO
GLORY

Porcilis[®]
ILEITIS

Argus[®] SC/ST



DRIVEN BY PREVENTION™



MERCK
Animal Health

Gut health is key to better performance.

Build a productive herd with a healthy gut. *Lawsonia* and *Salmonella* work together to damage the pig's gut, which can slow ADG. If you only protect against one, profit may be left on the table. Vaccinate against *Lawsonia* with PORCILIS® ILEITIS and *Salmonella* with ARGUS® SC/ST to complete your herd's gut protection and help improve operation efficiency.

A FIRST LINE OF DEFENSE

The gut is a primary defense against pathogens.

- The epithelial cells lining the gut represent the largest interface between the pig and the outside environment
- When epithelial cells become damaged, inflammation results
- The mucous layer covering the epithelial cells of the intestinal tract is called the mucosal surface. This layer is mainly composed of mucins and is the first barrier pathogens must overcome for successful colonization.¹



GUT HEALTH CRITICAL IN YOUNG PIGS

The nursery and early stages of a pig's life establishes health and level of performance for the remainder of its life.

- The gastrointestinal system undergoes the most rapid development during the first three months of life
- During this critical time, any disease challenge can have a serious, long-lasting impact
- When gut health is compromised, it reduces the overall growth of pigs and can even result in mortality

MULTIPLE GUT PATHOGENS AMPLIFY DISEASE IMPACT

Research has shown that *Lawsonia* and *Salmonella* favor each other when infecting the pig. This brings to light the importance of understanding the status of both pathogens in a herd and striving to control both *Lawsonia* and *Salmonella* to increase intestinal health.

- *Lawsonia* and *Salmonella* both significantly alter the gut environment of pigs¹
- *L. intracellularis* causes disease more efficiently when other microbes such as *Salmonella* are present
- In a study that followed 105 farms, researchers found that infection by *Lawsonia* was a significant risk factor for increased *Salmonella* shedding¹
- Pigs challenged with *Lawsonia* and *Salmonella* showed statistically significant increases in other pathogens, including *Anaerobacter*, *Barnesiella*, *Pediococcus*, *Sporacetigenium*, *Turcibacter*, *Catenibacterium*, *Prevotella*, *Pseudobutyrvibrio* and *Xylanibacter*¹

STRESS IS A CONTRIBUTING FACTOR

- It is common in every stage of the production cycle
- Different types of stress include social, environmental and weather changes
- It compromises the immune response, allowing pathogens to multiply, thereby increasing disease pressure



ILEITIS

Ileitis is a pervasive pathogen that decreases the average daily gain of grow-finish swine. In addition, it reduces the efficiency of feed utilization, which means that more feed is needed for each pound of growth. Finally, the acute hemorrhagic form can also cause mortality.

- Clinical signs include mild soft, watery and/or pasty diarrhea
- Ileitis may progress subclinically with no visible signs, but still can result in reduced weight gain
- Acute ileitis tends to be a hemorrhagic form characterized by black, tarry feces and sudden death, most commonly affecting late finishing pigs and replacement animals
- Stress from weather changes, moving or commingling pigs may cause a subclinical infection to become clinical

SALMONELLOSIS

Salmonellosis in swine is a concern both for its impact on grow-finish productivity as well as food safety. All ages are susceptible, but the disease is most common in weaned and grow-finish pigs. *Salmonella* can survive for an extended period in the environment and can be a constant threat.

- *S. choleraesuis* is the specific species adapted to swine
- Pigs infected with *S. choleraesuis* may have inflamed, thickened ileums and colons, as well as generalized sepsis²
- Asymptomatically infected pigs can become long-term carriers that intermittently shed bacteria when stressed
- The most common serotype in pigs is *S. typhimurium*, which is associated with diarrhea in young pigs and is a food safety concern

ILEITIS

42%

Nearly 42% of grow/finish operations report clinical ileitis, and nearly 94% of herds with no clinical signs were found to have subclinical ileitis^{3,4}

12
WEEKS

Pigs can shed *Lawsonia* for up to 12 weeks after signs have abated – and even subclinically infected pigs can shed the organism⁵

38%

Ileitis can slash ADG by 38% and feed efficiency by 27%⁶

SALMONELLOSIS

18.8%

On large finishing sites, studies indicated that 18.8% of the herds had a positive culture for *Salmonella*⁷

8
WEEKS

Salmonella can occur at any age but is more frequent in pigs 8 weeks or older

2,400+

Of the 2,400+ *Salmonella* serotypes, *S. choleraesuis* and *S. typhimurium* are the two species primarily causing clinical disease in pigs



Merck Animal Health helps you protect gut health and build productivity.



PORCILIS® ILEITIS LONG-LASTING PROTECTION FOR ILEITIS CONTROL

PORCILIS ILEITIS aids in the control of ileitis caused by *Lawsonia intracellularis*, the reduction of colonization by *Lawsonia* and the reduction of duration of fecal shedding.

Vaccinating with PORCILIS ILEITIS includes options to administer one 2 mL dose or two 1 mL doses as early as three days of age with a booster three weeks later. PORCILIS ILEITIS provides long-lasting protection early all while allowing pigs to remain on feed and water antibiotics during one of the most health-challenging periods – post-weaning.

Microsol Diluvac Forte® adjuvant is the difference. It has an impressive track record of creating a long and strong immunity.



Ready-to-use injectable vaccine with multi-dose option can be administered as early as 3 days of age



20-week DOI



Same powerful adjuvant found in CIRCUMVENT® PCV G2 and CIRCUMVENT® PCV-M G2



Non-medicated period not required



ARGUS® SC/ST PROVEN PROTECTION AGAINST BOTH *SALMONELLA CHOLERAESUIS* AND *SALMONELLA TYPHIMURIUM*

ARGUS SC/ST aids in the prevention of pneumonia, diarrhea, septicemia and mortality caused by *Salmonella choleraesuis* and aids in the control of disease and shedding of *Salmonella typhimurium*.

ARGUS works similarly to natural infection. The avirulent strain is ingested through the drinking water and is taken up by macrophages associated with the gastrointestinal tract. Macrophages then present antigens to the immune system, mounting a robust immune response that affords protection when natural challenge threatens pigs. It has been proven to reduce levels of *Salmonella* in ileocecal lymph nodes of pigs at slaughter.⁸



Improves ADG + .59 lbs./day⁸



Durable formulation doesn't require protecting stabilizers



Can be administered to pigs 3 weeks of age or older



Patented gene deletion assures vaccine will not revert to virulence

SOURCES:

¹Borewicz, KA. Changes in the porcine intestinal microbiome in response to infection with *Salmonella enterica* and *Lawsonia intracellularis*. *PLOS One*. 2015;13(10):e0139106.

²Harris, DLH. Intestinal Salmonellosis in Pigs. Merck Veterinary Manual online. <https://www.merckvetmanual.com/digestive-system/intestinal-diseases-in-pigs/intestinal-salmonellosis-in-pigs>. Accessed April 8, 2019.

³USDA. 2007. Swine 2006, Part II: Reference of Swine Health and Health Management Practices in the United States, 2006. USDA:APHIS:VS, CEAH. Fort Collins, CO. #N479.1207.

⁴Armbruster GA, et al. Review of *Lawsonia intracellularis* seroprevalence screening in the United States, June 2003 to July 2006. *Proceedings of the 38th Annual Meeting of the American Association of Swine Veterinarians*. 2007.

⁵Guedes R. Update on epidemiology and diagnosis of porcine proliferative enteropathy. *J Swine Health Prod*. 2004;12(3):134-138.

⁶Paradis MA, McKay RI, Wilson JB, Vessie GH, Winkelman NL, Gebhart CJ. Subclinical ileitis produced by sequential dilutions of *Lawsonia intracellularis* in a mucosal homogenate challenge model. *Proceedings of the 36th Annual Meeting of the American Association of Swine Veterinarians*. 2005.

⁷United States Department of Agriculture. Swine 2012 Part II: Reference of Swine Health and Health Management in the United States. 2012.

⁸Data on file, Merck Animal Health.

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