

Bulletin

Boehringer Ingelheim Vetmedica, Inc.

TECHNICAL

Comparison of Enterisol® Ileitis Non-frozen and Enterisol® Ileitis Frozen

Enterisol® Ileitis is Boehringer Ingelheim Vetmedica's tradename for its innovative oral swine ileitis vaccines. First introduced in frozen form (FF), the *non-frozen* form (NF) is now available in the US. Both forms contain an attenuated live isolate of *Lawsonia intracellularis*, the causative agent of porcine proliferative enteropathy, commonly known as ileitis. The FF vaccine is marketed in the US and Canada where larger herds are common while the NF vaccine will be marketed globally. While most aspects of these two vaccines are similar, Table 1 illustrates a few key differences.

Table 1. **Key differences** between Non-Frozen and Frozen forms of Enterisol Ileitis

	Non-Frozen	Frozen
Long-term storage	Refrigerator temps 35-45°F/2-7°C	Ultra-low freezer -94°F/-70°C
Short-term storage	Refrigerator temps 35-45°F/2-7°C	≤ 2 weeks/conventional freezer* ≤ 1 week/self-defrosting freezer*
Reactivation [^]	<i>Reconstitution</i> with accompanying diluent	<i>Thawing</i> in cool trickling tap water
Dose presentations	50, 100	100, 250, 500

*place original shipping cooler with the vaccine and remaining dry ice in its entirety in the freezer

[^]do not reactivate vaccines until immediately prior to use

While the FF vaccine contains an attenuated *L intracellularis* isolate of US origin, the NF vaccine contains an attenuated isolate of EU origin to facilitate EU and global licensure. The origin of the isolates is only a minor difference between the vaccines since researchers have found no phenotypic, immunogenic or diagnostic differences between *L. intracellularis* isolates^{1,2,3}. Polymerase chain reaction primer specificity, monoclonal antibody affinity, outer membrane protein characterization, immunohistochemistry reactivity, serologic response and *in vitro* growth requirements cannot differentiate isolates. Similar clinical and subclinical disease profiles are described globally. Vaccine efficacy studies by Boehringer scientists have found both vaccine forms to be effective against challenge with virulent isolates of *L. intracellularis* recovered thousands of miles and several years in time apart from either vaccine parent isolate⁴. For these and other reasons *L. intracellularis* has been referred to as a “monotypic” (one type) organism by experts in the field⁵.

The performance of both vaccines has been similar when tested in the same pure culture challenge model. Table 2 illustrates many of the similarities between the two forms of Enterisol Ileitis.

Table 2. **Similarities** between Enterisol® Ileitis Non-Frozen and Frozen Form vaccines in separate pure culture *Lawsonia intracellularis* challenge studies.

	Non-Frozen	Frozen
ADG	↑	↑
Gross lesion prevalence & severity	↓	↓
Microscopic lesion prevalence & severity	↓	↓
Fecal shedding (post-challenge)	↓	↓
Safety: overdose; reversion to virulence	Safe	Safe
Seroconversion due to vaccination*	Minimal	Minimal
Onset of immunity	3-4 weeks	3-4 weeks
Duration of immunity ≥ 22 weeks	Yes	Not tested
Delivery methods	Drinking water or oral drench	Drinking water
Antibiotic & disinfectant avoidance	Yes	Yes
Administration period	4-6 hours	4-6 hours
Reactivation <i>immediately prior to use</i>	Yes	Yes
Use of Ready Packs recommended	Yes	Yes

*seronegative vaccinates are protected against subsequent virulent challenge

Conclusions

- Both the Non-Frozen and Frozen Forms of Enterisol Ileitis are highly effective at preventing and controlling ileitis due to *Lawsonia intracellularis* infection while substantially reducing antibiotic use.
- The Non-Frozen form may be particularly appealing to
 - producers with smaller groups of swine to vaccinate
 - producers who value the added convenience of short- and long-term refrigerator storage.

References

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2. D Cooper, D Swanson, S Barns, C Gebhart. Comparison of 16S ribosomal DNA sequence from the intracellular agent of proliferative enteritis in hamster, deer, and ostrich with the sequence of a porcine isolate of *Lawsonia intracellularis*. *Int J Syst Bact* 1997;(47)635-639.
3. D Cooper, D Swanson, and C Gebhart. Diagnosis of proliferative enteritis in frozen and formalin-fixed paraffin-embedded tissues from a hamster, horse, deer, and ostrich using a *Lawsonia intracellularis*-specific multiplex PCR assay. *Vet Micro* 1997;(54)47-62.
4. Boehringer Ingelheim Vetmedica Inc. Research & Development Dept, data on file.
5. S McOrist, D Barcellos, R Wilson. Global patterns of porcine proliferative enteropathy. *The Pig Journal* 2003;(51)26-35.

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