猪场回肠炎感染状况与对经济效益影响的分析

Analysis of ileitis infection status and impact on economic benefits

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猪消化道疾病国际研讨会

International Pig Digestive Diseases Symposium

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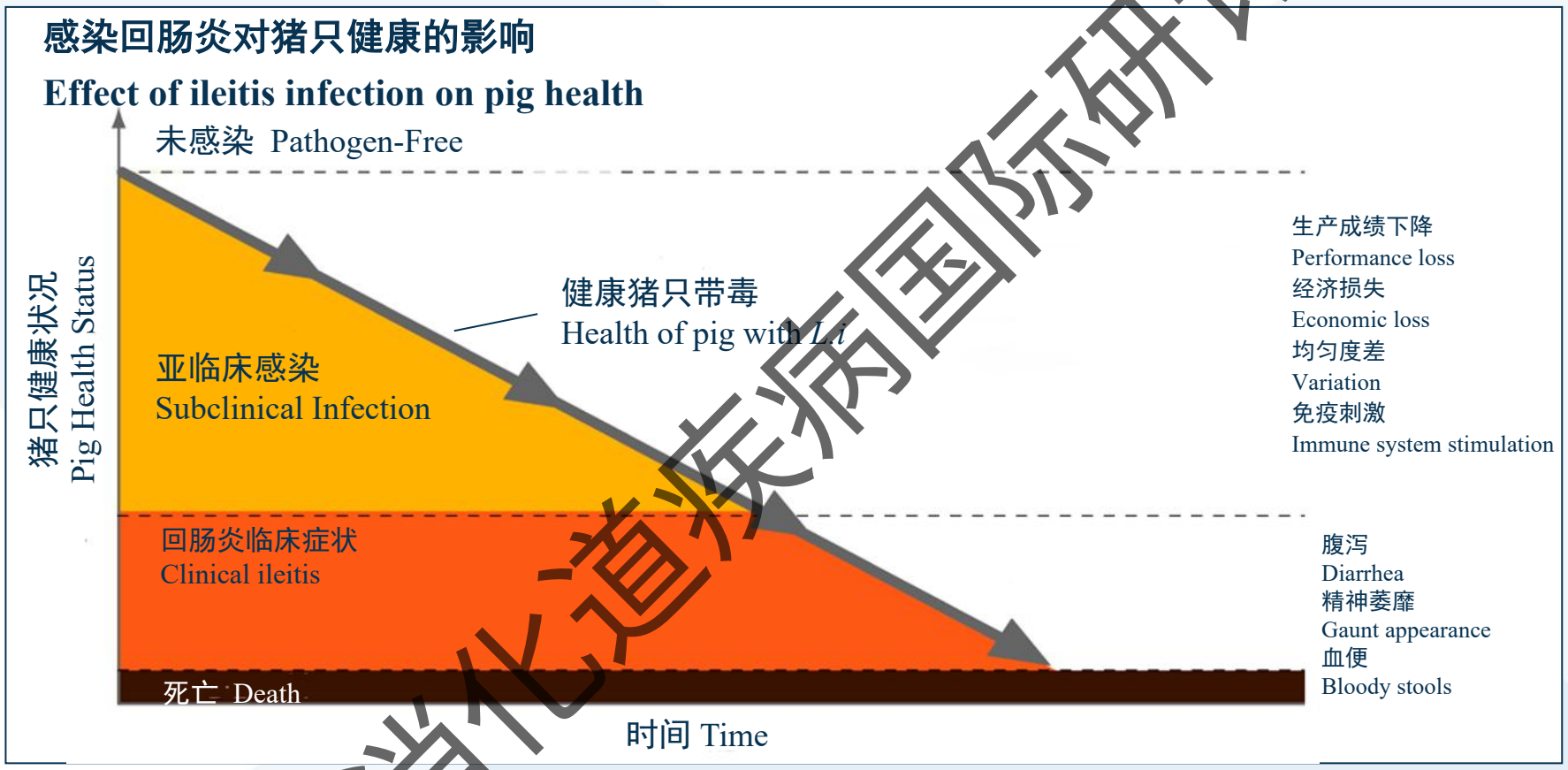
回肠炎常见诊断方法　Methods for the diagnosis of ileitis

❑ 临床诊断方法 Methods of clinical diagnosis



- **回肠炎通常由亚临床开始**
- Ileitis always begins in subclinical form

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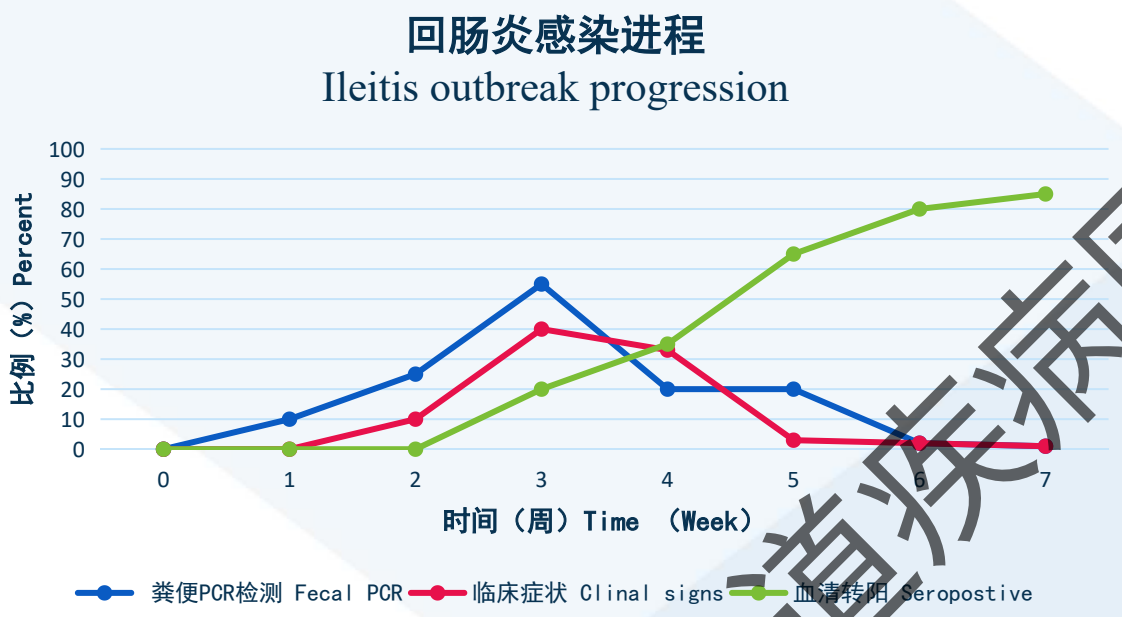
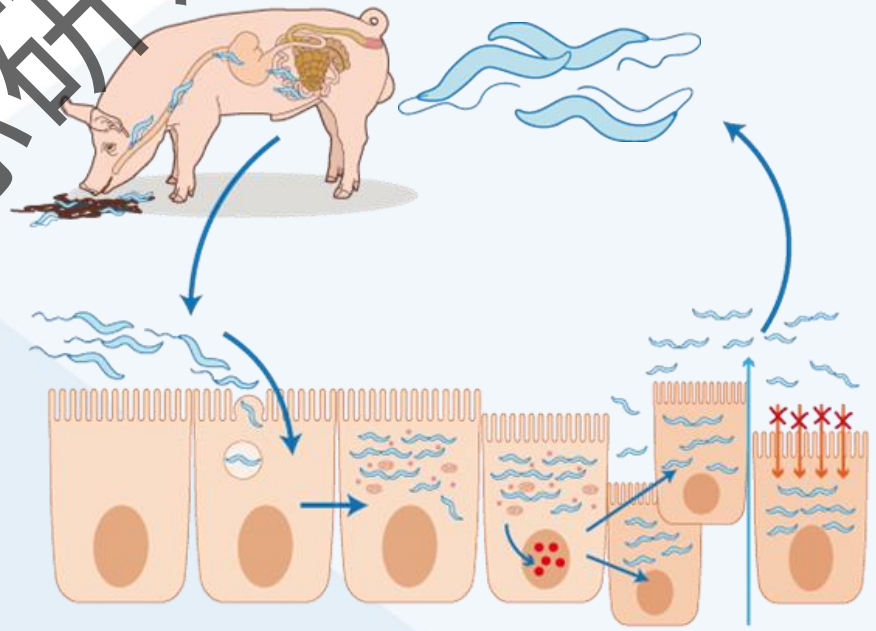
回肠炎常见诊断方法　Methods for the diagnosis of ileitis

❑ 实验室诊断方法 Methods of Lab diagnosis





- PCR检测粪便
- PCR of fecal sample
- 血清学方法
- Serology test

- 胞内劳森菌可以在粪便中存活2周
- *L.i* can survive for up to 2 weeks in manure[1]

[1] Collins, A. et al. Studies on the ex vivo survival of *Lawsonia intracellularis*. *Swine Health Prod.*; 8:211-215, 2000.

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❑ 实验室诊断方法 Methods of Lab diagnosis

设计检测方案

Design test programme

–确定样本数量

- **Size of samples**
- **–确定样本类型**
- **Type of samples**

采集样本

Collect samples

-采集新鲜粪便

Collect fresh feces

-封口与标记

Sealing and marking

交付样本

Delivery samples

–冷藏保存

Keep refrigerated

完成检测

qPCR test

–交付与解读检测结果

Deliver and interpret test results

–确定方案获得反馈

- **使用荧光定量PCR检测方法：高敏感性与特异性**
- **Real-time PCR assays: high sensitivity and specificity**
- **交付第三方实验室检测：CNAS 认证**
- **Delivery of third-party laboratory testing: CNAS certification**
- **采集粪便样本：方便操作，低生物安全风险**
- **Collection of fecal samples: easy to handle and low biosecurity risk**

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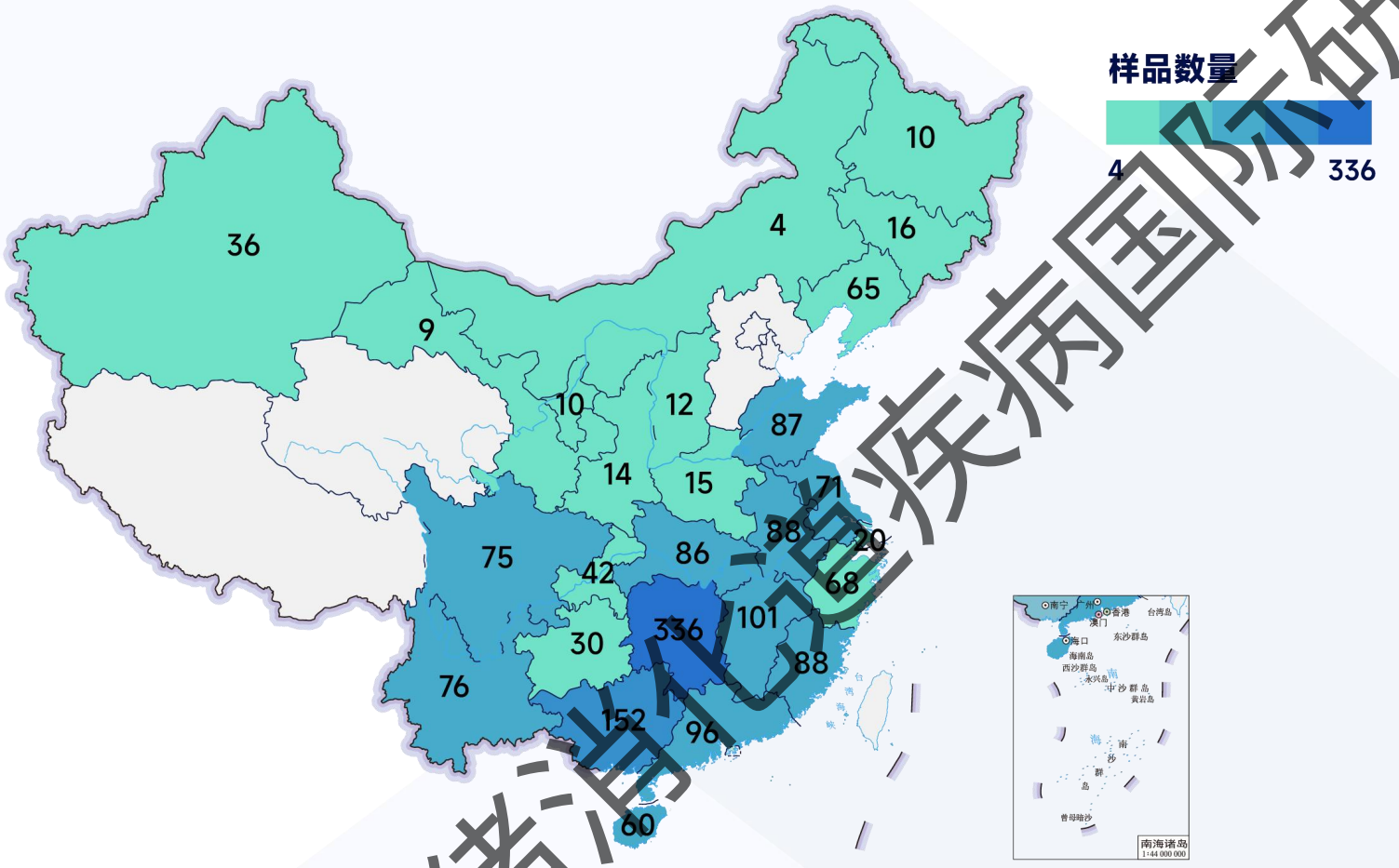
回肠炎感染状况分析 Analysis of ileitis infection status

❑ 粪便样本采集数量及区域分布 Number and regional distribution of fecal samples



26个省（市、自治区）

26 provinces

1667份样本

1667 fecal samples

169个猪场

169 farms

数据来源于全国主要养猪地区猪回肠炎感染情况调查(2022-2023)
Data from the investigation of swine Ileitis infection in major pig production areas of China (2022-2023)

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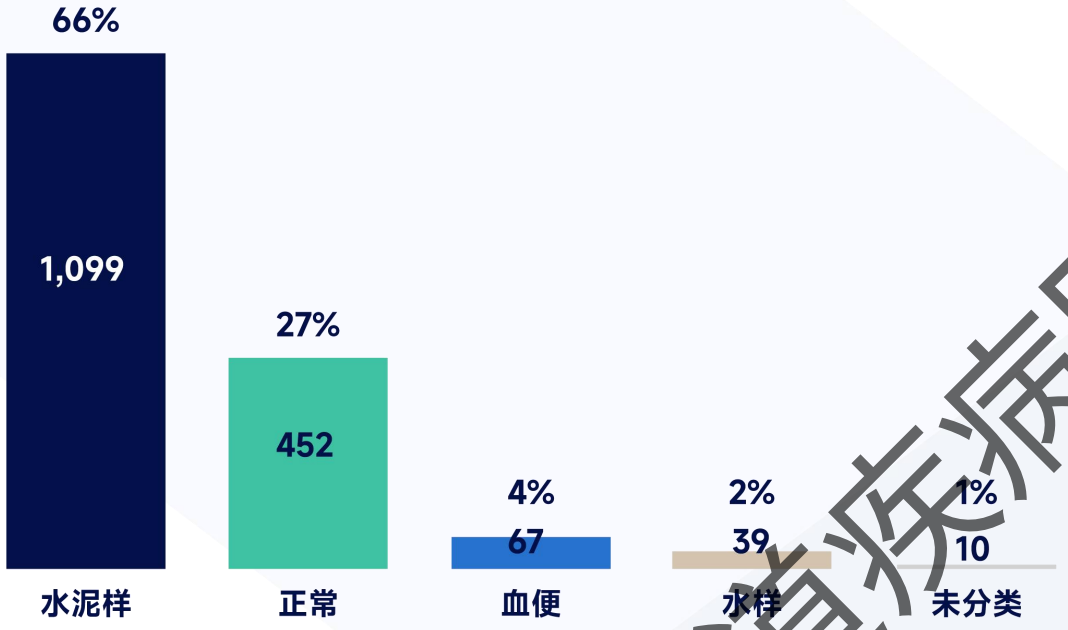
❑ 粪便样本类型 Type of fecal samples



各种粪便样本数量与占比

Number and proportion of various fecal samples

不同类型粪便样本图示

Different types of fecal samples

- 主要样本为水泥样粪便，样本数量1099份，占比66%
- The main samples are loose feces , with 1099 samples , accounting for 66%

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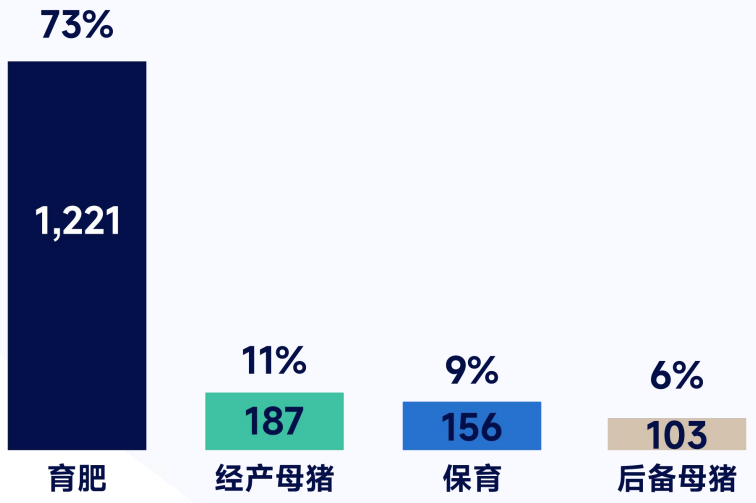
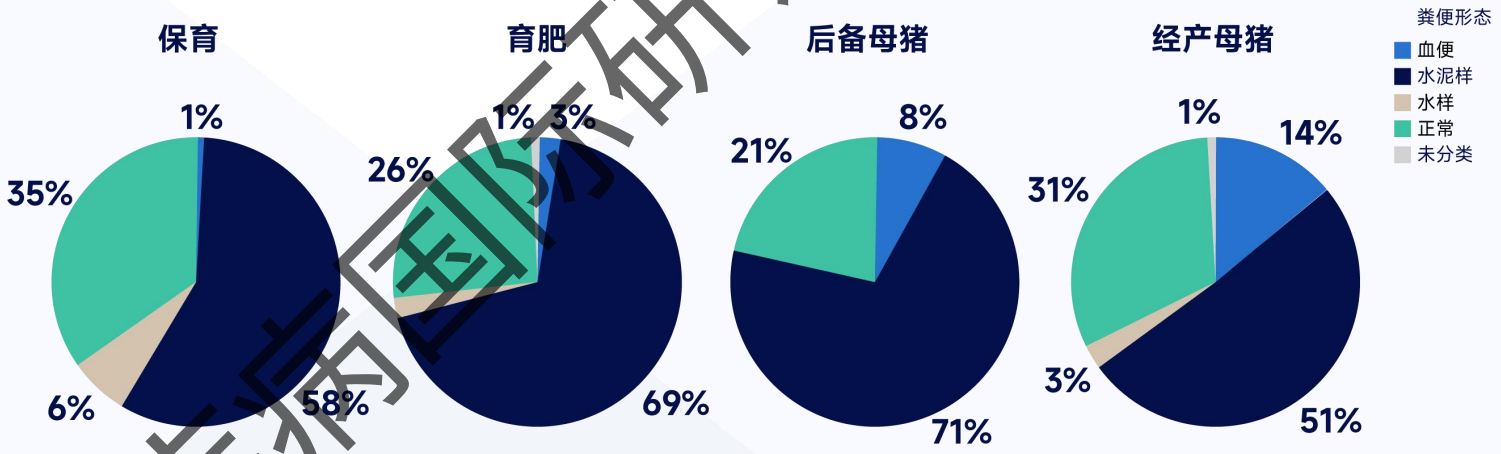
回肠炎感染状况分析 Analysis of ileitis infection status

❑ 粪便样本来源猪群 Fecal samples sourced from different herds





- 来源于生长育肥群粪便样本，1221份，占比73%
- 1221 fecal samples from grow-finish pigs, accounting for 73%
- 来源于母猪群（后备母猪、经产母猪）的粪便样本中，血便样本比例较高
- High proportion of fecal samples from sows are bloody samples

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回肠炎感染状况分析 Analysis of ileitis infection status

❑ 猪场与粪便样本胞内劳森菌检出率 *L.i* detection rate in farms and fecal samples

169个猪场
169 farms

1667份粪便样本
1667 fecal samples

96. 4%

86%

猪场检出率
Detection rate of farms

粪便样本检出率
Detection rate of fecal samples

- 来源于169个猪场的粪便样本中，检出胞内劳森菌的猪场共计163个，猪场检出率为96. 4%；
- The fecal samples from 169 farms, 163 farms were detected with *L.i*, and the detection rate of farms was 96.4%.
- 检测1667份粪便样本，检出胞内劳森菌的样本1433份，粪便样本检出率为86%。
- 1667 fecal samples were detected with *L.i*, and the detection rate of samples was 86%.

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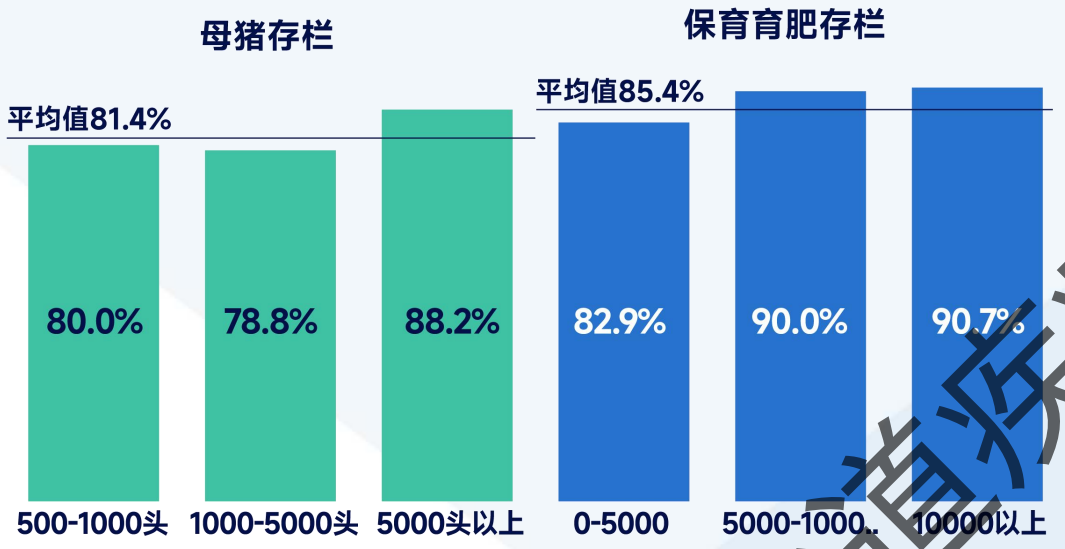
回肠炎感染状况分析 Analysis of ileitis infection status

❑ 不同规模猪场粪便样本中胞内劳森菌检出率 Detection rate of *L.i* in fecal samples of different herd sizes farms



- 来源于不同规模母猪场的粪便样本检出率平均为81.4%，其中母猪存栏5000头以上的检出率最高；
- The average detection rate of fecal samples from sow farms with different sizes was 81.4% and detection rate of more than 5000 sows was the highest.

- 来源于不同规模的保育-育肥场的粪便样本检出率平均为85. 4%，其中存栏超过10000头检出率最高。
- The average detection rate of fecal samples from different herd sizes of nursery-finish farms was 85.4%, and the detection rate of pig farm which produced 10,000 pigs was the highest.

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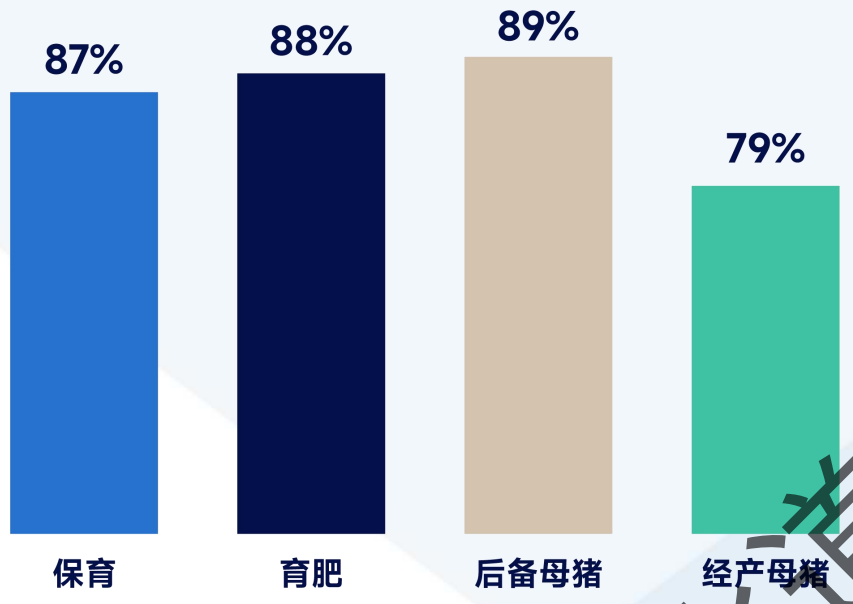
回肠炎感染状况分析 Analysis of ileitis infection status

❑ 不同类型猪群粪便样本中胞内劳森菌检出率 Detection rate of *L.i* in fecal samples of different type of pigs



- 来源于保育、生长育肥和后备母猪的粪便样本胞内劳森菌的检出率全部超过了80%；
- The detection rate of *L.i* in fecal samples from nursery, grow-finish and gilts was more than 80%.
- 经产母猪粪便样本检出率为79%。
- Detection rate of fecal sample from sows was 79%.
- 各猪群都存在胞内劳森菌的感染，其中后备母猪的检出率高于其他猪群。
- There were *L.i* infection in pig herds at different stages, and the detection rate of gilts was higher than that of other pig herds。

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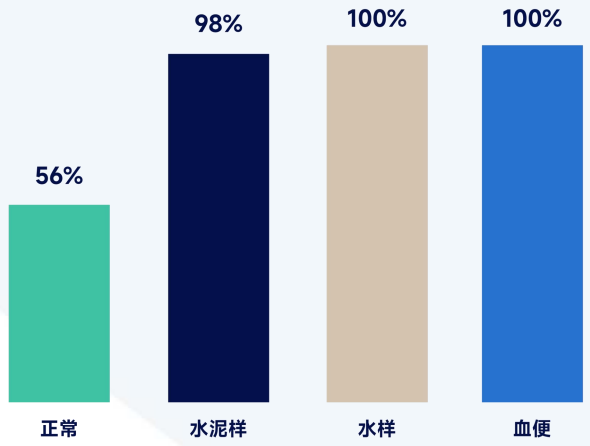
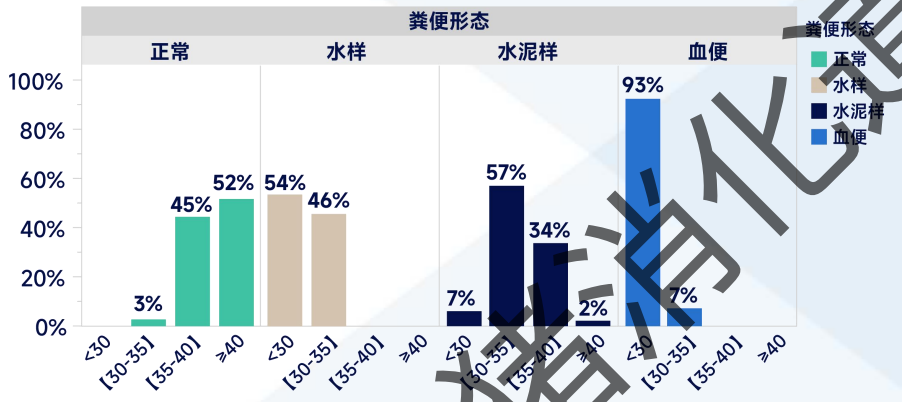
❑ 不同类型粪便样本中胞内劳森菌检出率 Detection rate of *L.i* in different types of fecal samples





- 水样腹泻粪便与血便样本胞内劳森菌检出率均为100%。
- The detection rate of watery and bloody stools is 100%

- 血便样本的Ct值平均为24. 68;正常形态粪便Ct值平均为40. 99。
- The average Ct value of blood stools samples was 24.68. The average Ct value of normal feces was 40.99.

- 粪便样本检出的Ct值大小与腹泻严重程度负相关。
- There was a negative correlation between the size of the Ct value detected in the fecal samples and the severity of diarrhea.

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回肠炎感染状况分析 Analysis of ileitis infection status

❑ 保育-育肥猪群粪便样本检出率与Ct值 Detection rate and Ct value of fecal samples from nursery-finish pigs

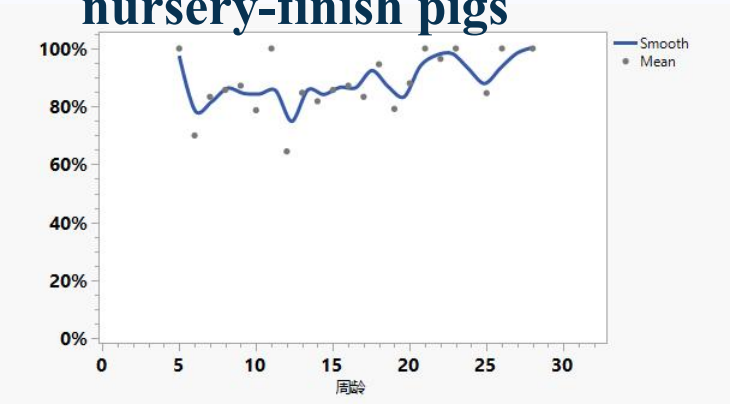

图1 不同周龄保育育肥猪粪便样本检出率

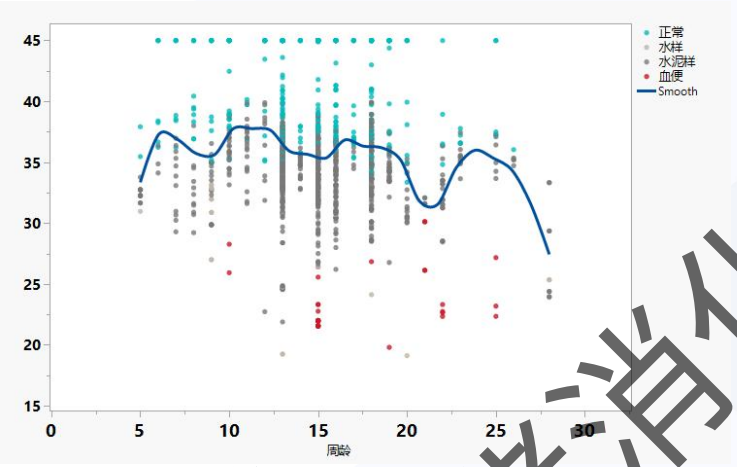

图2 不同周龄保育育肥猪粪便样本检出CT值

- 各个周龄的保育-育肥猪的粪便样本均有胞内劳森菌的检出，随着周龄增加，检出率呈上升趋势；
- *L.i* was detected in fecal samples of nursery-finish pigs of some weeks old, and the detection rate increased with the increase of age.

- 各个周龄的保育-育肥猪的粪便样本的胞内劳森菌Ct值存在差异，随着周龄增加，Ct值呈下降趋势。
- There were differences in the Ct value of *L.i* fecal samples of nursery-finish pigs at different weeks old, with the increase of age, the Ct value showed a downward trend.

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❑ 不同感染剂量的胞内劳森菌导致临床症状的差异Different doses of *L.i* cause differences in clinical signs

分组 Group	*L.i* 剂量/头 *L.i* dose per pig	粪便评分 Fecal score
A	SPG	0.08[a]
F	3.2×10^4	0.18[a]
E	3.8×10^5	0.43[a]
D	2.2×10^6	0.37[a]
C	7.2×10^7	0.93[b]
B	2.4×10^8	1.34[b]

[a,b]no common superscripts are significantly different ($P<0.05$)

- 14天粪便评分（0正常，1-软便，2-水样）
- 14 days fecal score（Normal=0、Moderate=1、Severe=2）
- D/E/F组粪便评分较低(0.18-0.43)，与对照组差异不显著
- D-F were low (0.18-0.43)， were not significantly different from A
- 组织病理学证明D/E/F组存在感染，初步判断为亚临床感染
- Evidence of *L.i* infection on histopathology， Subclinical *L.i* infection in D through F

Subclinical ileitis produced by sequential dilutions of *Lawsonia intracellularis* in a mucosal homogenate challenge model. AASV Procceedings 2005, pp 189-191

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❑ 不同感染剂量的胞内劳森菌导致生产成绩的差异 Different doses of *L.i* cause differences in production performance

分组 Group	LI 剂量/头 *L.i* dose per pig	日增重（千克） ADG（KG）	料肉比 FCR
A	SPG	0.40[a]	1.63[a]
F	3.2 x 10^4	0.25[b]	2.07[b]
E	3.8 X 10^5	0.23[b]	2.10[b]
D	2.2 X 10^6	0.24[b]	2.24[bc]
C	7.2 x 10^7	0.19[b]	2.51[bc]
B	2.4 x 10^8	0.16[b]	2.92[c]

[a,b,c]no common superscripts are significantly different ($P<0.05$)

- 平均日增重与料肉比：实验第0–21天
- ADG and FCR: days 0 to 21
- 所有剂量的攻毒均造成显著的生产成绩下降
- All doses produced significant decrease in production performance

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❑ 枝原净®控制回肠炎对临床症状的改善 Improvements of Denagard® control of ileitis on clinical signs

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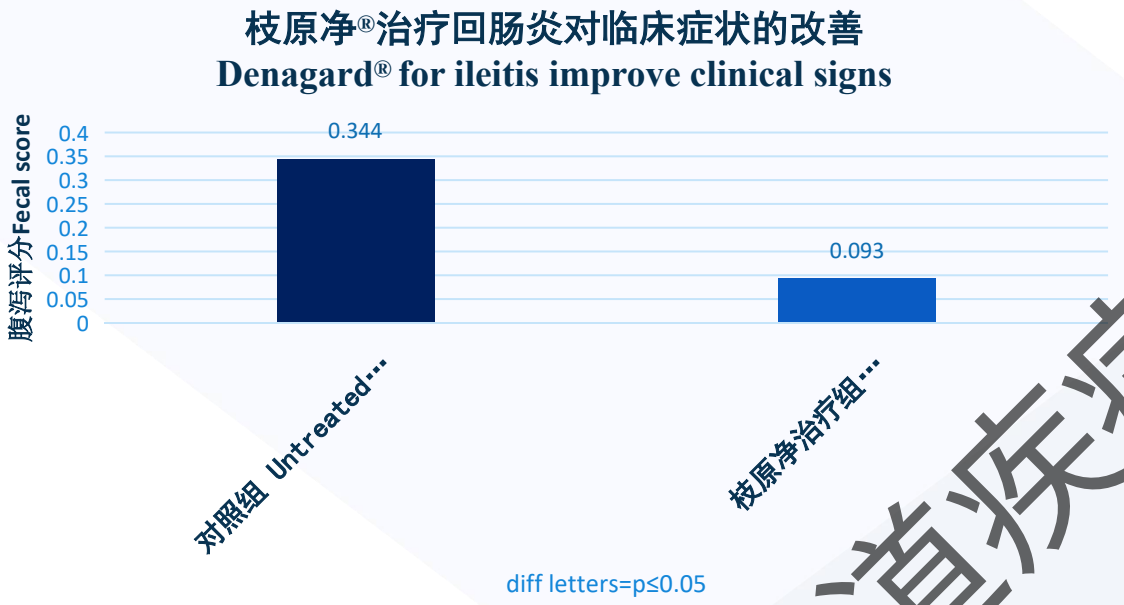

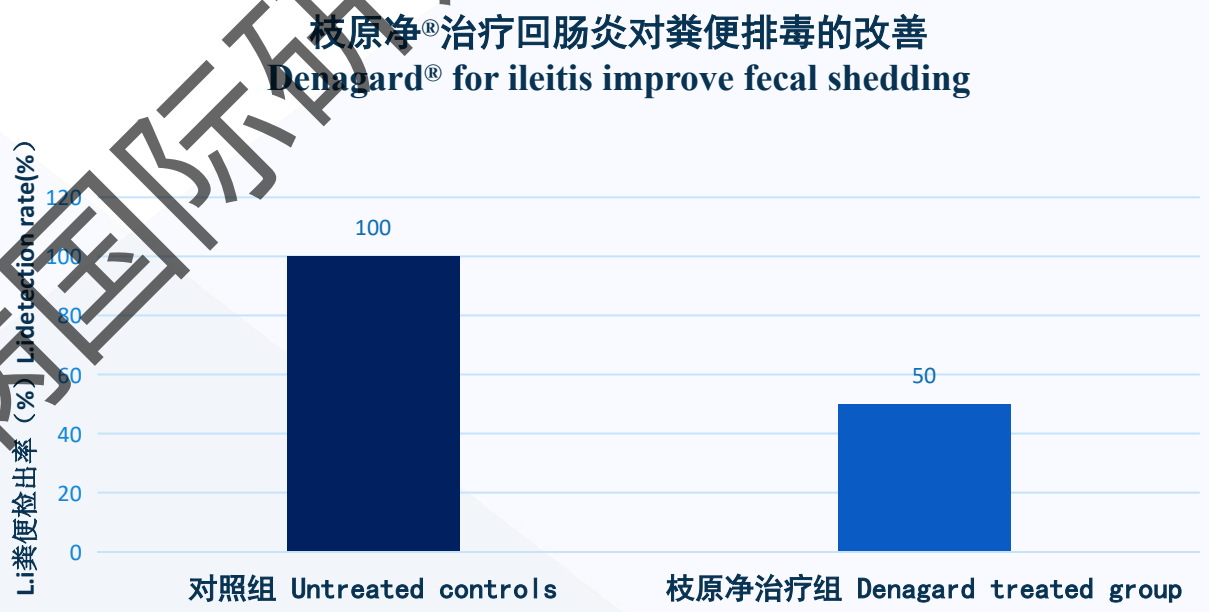

- 临床症状改善明显：腹泻评分差异显著
- Significant improvement in clinical signs: significant differences in diarrhea scores
- 改善粪便排毒：粪便胞内劳森菌检出率下降
- Improved fecal shedding: decreased detection of *L.i* in feces

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Comparison of tiamulin (Denagard®) with tylosin (Tylan®) premix for the treatment of ileitisDGS.
Burch1, HMJ. Howells2, L. Murray2, G. Hodgson3, G. Strehlau4, U. Klein.

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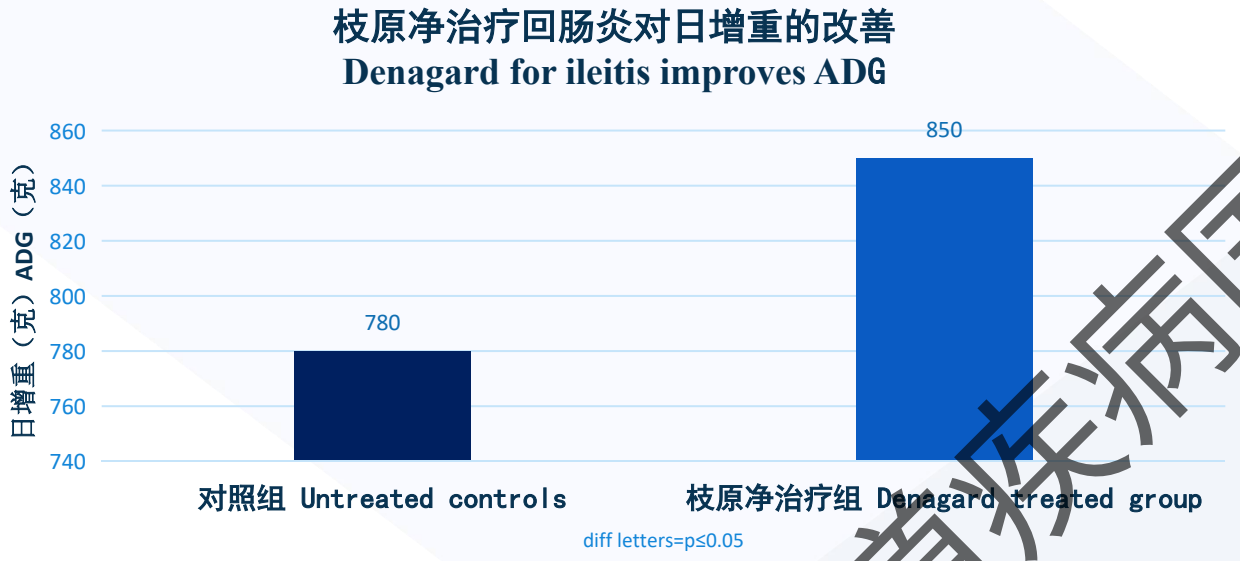

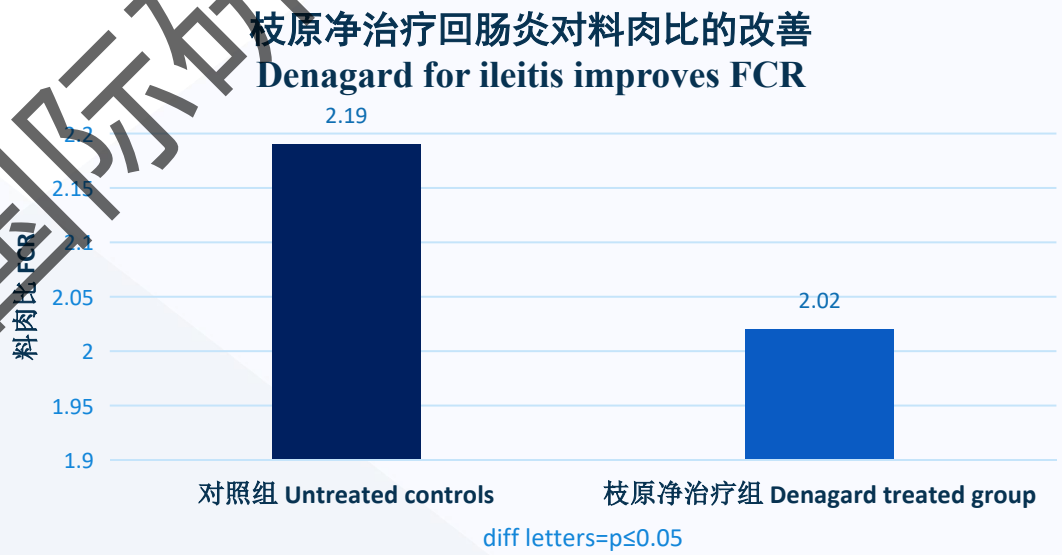

- 治疗方案：每吨饲料添加枝原净®125克，连续使用21天
- Medical protocol: 125 g Denagard® per ton of feed for 21 consecutive days
- 生产成绩改善：与对照组比较，日增重改善70克，料肉比改善0. 17.
- Improvement in production performance : compared with the control group, ADG improved by 70 grams, and the FCR improved by 0.17.

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Comparison of tiamulin (Denagard®) with tylosin (Tylan®) premix for the treatment of ileitisDGS. Burch1, HMJ. Howells2, L. Murray2, G. Hodgson3, G. Strehlau4, U. Klein.

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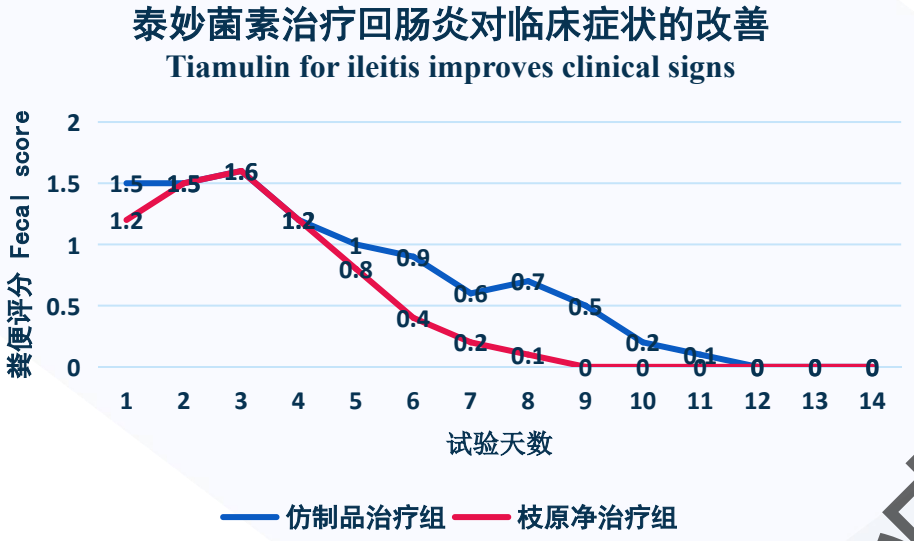
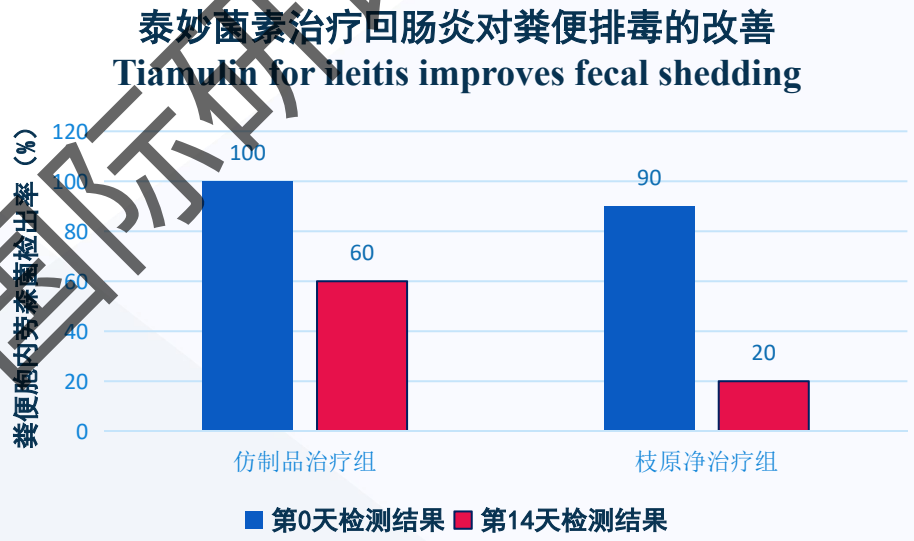
❑ 泰妙菌素控制回肠炎改善临床症状的差异 Tiamulin controls ileitis to improve the differences in clinical signs





枝原净®治疗组（100克/吨）与仿制品）治疗组（300克/吨）对比：

Comparison of the Denagard® treatment group (100 g/ton) and the generic treatment group (300 g/ton) :

- **临床症状：枝原净®治疗组第8天腹泻症状消失，比仿制品治疗组提前3天；**
- **Clinical signs: diarrhea disappeared on the 8th day in the Denagard® treatment group, which was 3 days earlier than that of the tiamulin generic treatment group;**
- **粪便排毒：经过14天治疗，枝原净®治疗组粪便胞内劳森菌检出率下降70%，仿制品治疗组下降40%**
- **Fecal shedding: after 14 days of treatment, the detection rate of L.i in feces decreased by 70%in the Denagard® treatment group and 40% in the generic treatment group**

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猪消化道疾病国际研讨会

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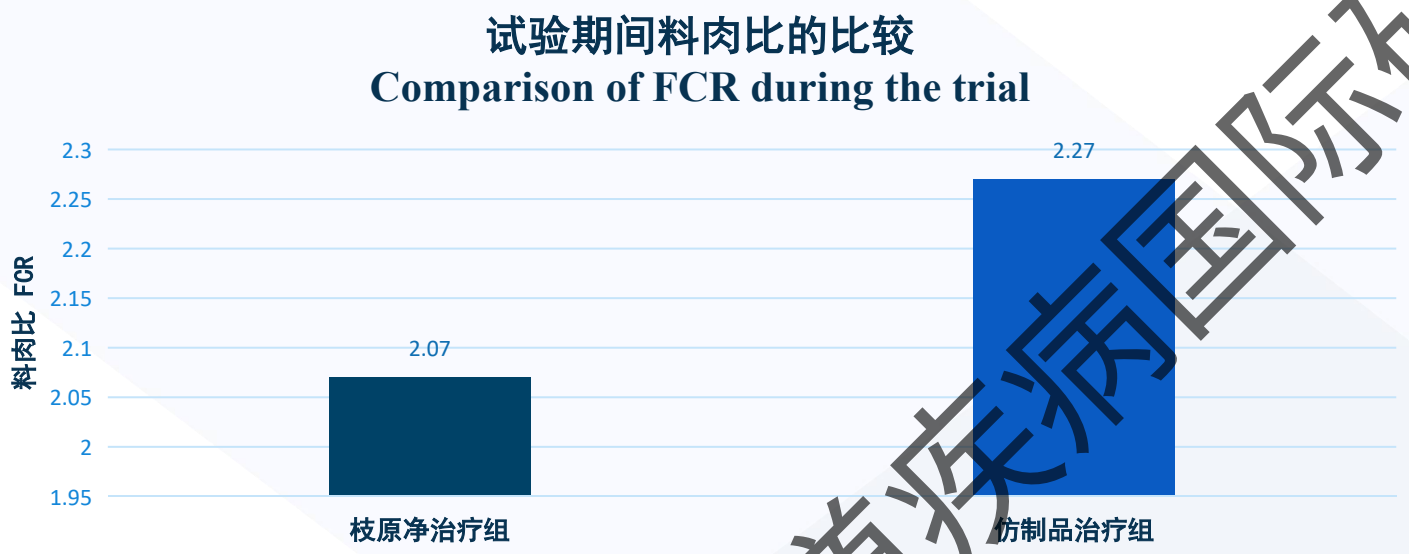
回肠炎对猪场经济效益的影响 Impacts of ileitis on the economic benefits

❑ 泰妙菌素控制回肠炎改善生产成绩的差异 Tiamulin controls ileitis to improve the differences in production performance



- 枝原净®治疗组（100克/吨）与仿制品治疗组（300克/吨）对比：
- Comparison of the Denagard® treatment group (100 g/ton) and the generic treatment group (300 g/ton) :
- 料肉比改善比较：试验期间（14天）枝原净®治疗组比仿制品治疗组降低0.2
- Comparison of improvement in FCR: During the trial period (14 days), the Denagard ®treatment group was reduced by 0.2 compared with the generic treatment group

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总结 Summary

- 粪便样本中胞内劳森菌检出率达到了86%，猪场检出率为96. 4%，与国外主要养猪区域猪场检出率基本相符；
- The detection rate of *L.i* in fecal samples reached 86%, and the detection rate of pig farms was 96.4%, which was basically consistent with the detection rate of pig farms in major foreign pig production areas.
- 后备母猪与生长育肥猪后期的粪便中胞内劳森菌检出率较高，与养猪生产过程观察到临床症状基本符合；
- The detection rate of *L.i* in the feces of gilts and grow-finish pigs was higher, which was basically consistent with the clinical signs observed during pig production.

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总结 Summary

- 不同类型粪便中均有较高的胞内劳森菌检出率，提醒猪场在关注急性回肠炎时，需要同时关注亚临床回肠炎对猪群的影响；
- The detection rate of *L.i* in different types of feces was high, which reminded pig farms to pay attention to the impact of subclinical ileitis on pigs when paying attention to acute ileitis.
- 回肠炎治疗试验表明：枝原净®治疗回肠炎可明显改善临床症状，减少粪便排毒与提升生产成绩；防治效果优于仿制品。
- The treatment trial of ileitis showed that the treatment of ileitis with Denagard® can significantly improve the clinical signs, reduce fecal shedding and improve production performance. The prevention and control effect is better than that of the generic.

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