

Regano® in Gestation and Lactation Diets Improves Sow Enteric Health and Piglet Performance

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Introduction

- Sow productivity has a major impact on profitability and it is compromised by stress and disease. Litter health is directly related to sow health.
- Improving sow enteric health increases piglet health and robustness, leading to more full value pigs at weaning.
- Regano® with oregano extract is a phytogenic feed additive with a spicy, aromatic flavor that stimulates appetite, promotes feed intake and supports enteric health.
- Oregano extract has well documented anti-bacterial, anti-fungal and anti-oxidant activities. *E. coli*, *Clostridium perfringens*, and many other pig pathogens are susceptible to oregano extract (1-3).
- Carvacrol, thymol, and their precursor, p-cymene, are the components of oregano extract that are responsible for bactericidal activity.
- Oregano extract rapidly kills bacteria by altering cell membrane permeability (Fig. 1). Carvacrol diffuses through the cytoplasmic membrane and binds to cations. Cations are moved out of the cell resulting in bacterial cell death (3, 4).

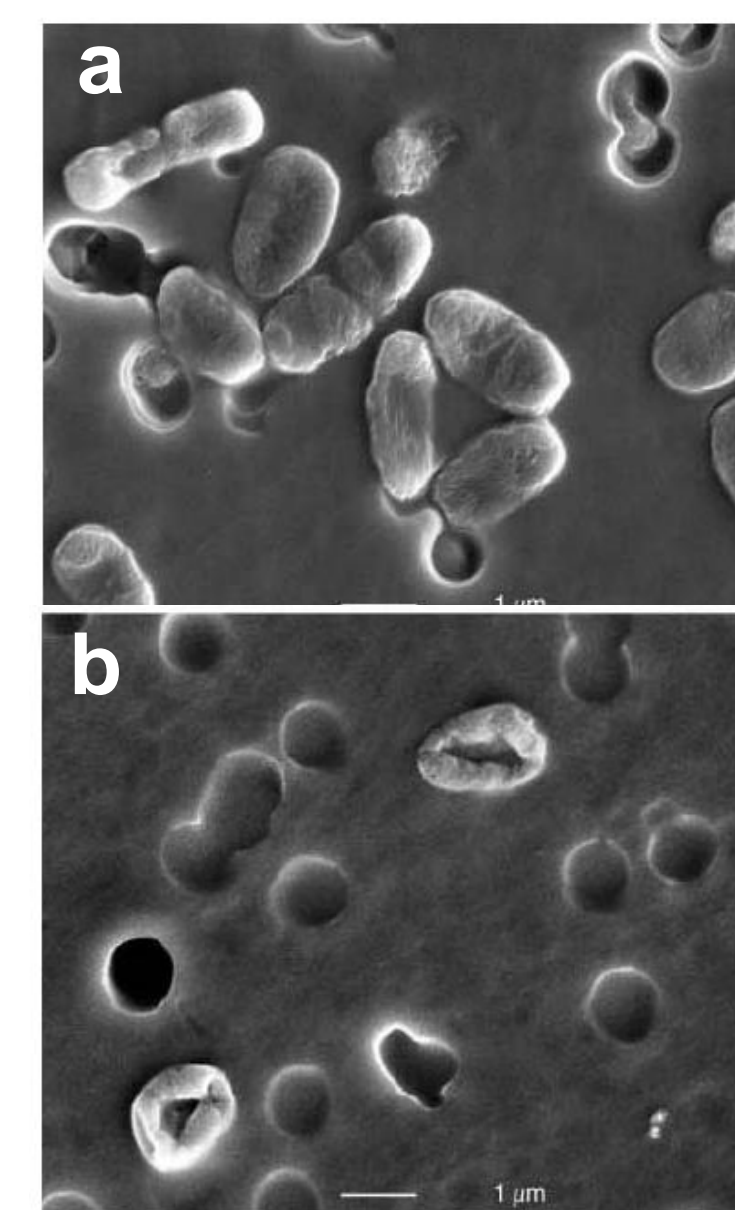
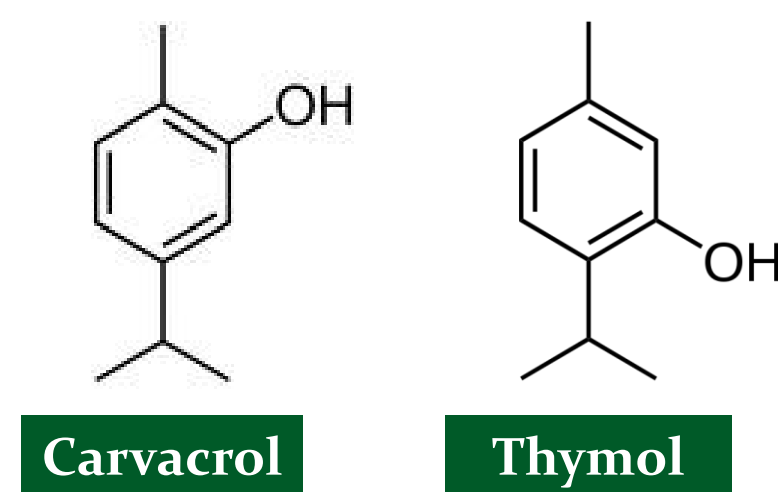


Fig. 1. Scanning electron microscope images of *E. coli* O157:H7 cells after treatment with oregano essential oil (12,000x). (a) Untreated cells (control); (b) Cells damaged after treatment with 625 µL/L oregano oil (3).

OBJECTIVE: Investigate the effects of Regano® in gestation and lactation diets on sow intestinal health and associated improvements in litter health and performance

Materials & Methods

- 2,000 sow farm in Brazil during the winter of 2010
 - Control group: n = 24; Test group: n = 24. There were 12 control and 12 test sows in each of two farrowing rooms.
- Diets
 - Control diet: farm's usual medication-free corn-soy diet.
 - Test diet: farm's usual diet containing Regano® EX (Ralco Animal Health). Gestation diet contained Regano® at 0.6 lb/ton and was fed from d80 of gestation to farrowing. Lactation diet contained Regano® at 1.0 lb/ton and was fed from farrowing to d27 (weaning).
- Enteric health
 - Sow: *E. coli* quantitative cultures were performed on fecal samples from 10 sows/treatment on d80 of gestation (before Regano®), d7 post-farrow and at weaning (d27).
 - Litter: Litters were scored daily for scours. A litter was considered positive if ≥1 piglet showed signs of scouring anytime during lactation.

References

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Results

Fig. 2. Effects of Regano® on *E. coli* in sow feces before and after treatment.

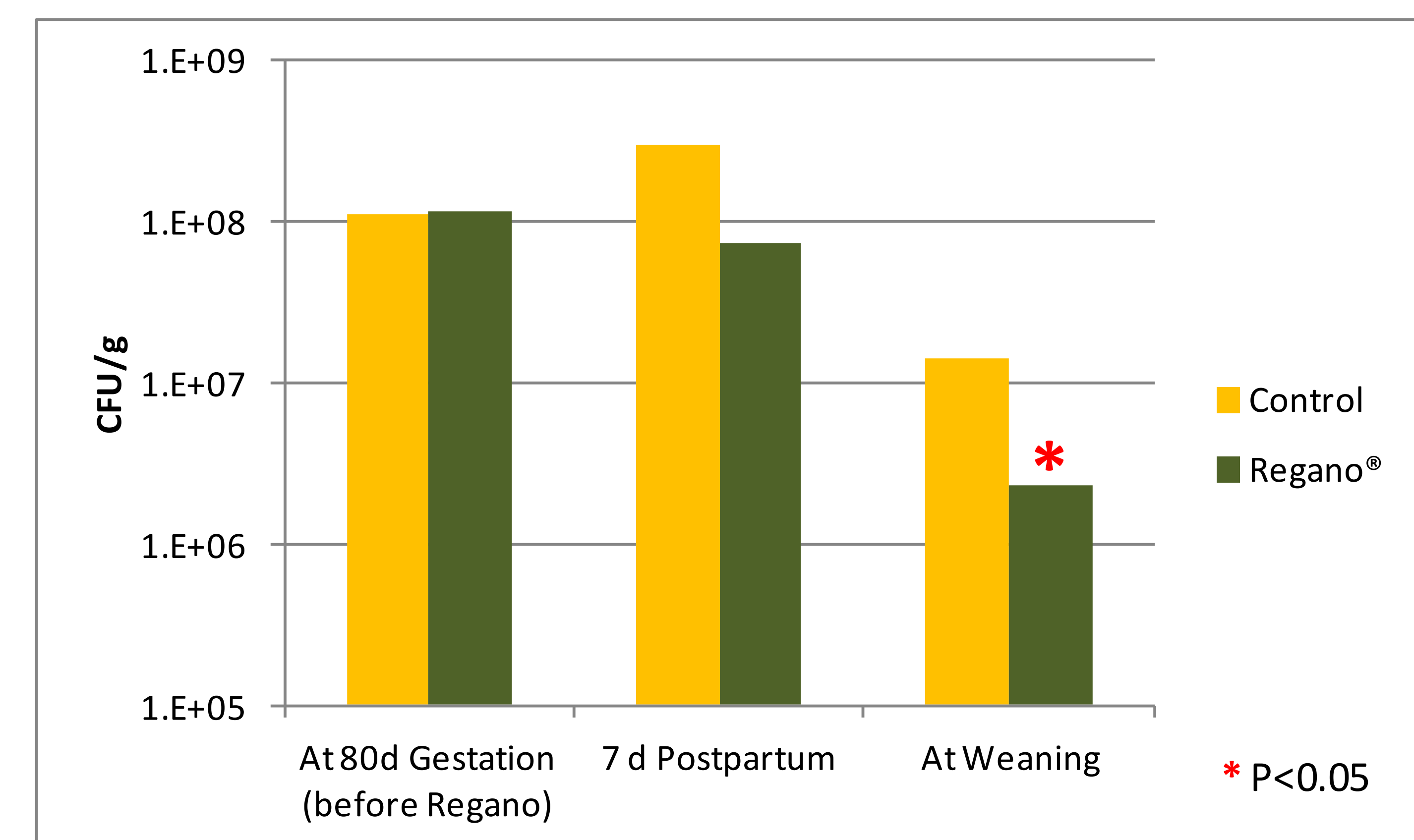


Table 1. Effects of Regano® on litter health and performance.

| Trait | Control | Regano® | Difference |
|------------------------|---------|---------|-----------------|
| PWM, % | 10.25 | 9.73 | -0.52 |
| No. weaned | 10.96 | 12.23 | +1.27 |
| Litters with scours, % | 95.8 | 77.3 | -18.6 |
| Birth weight, kg | 1.40 | 1.48 | +0.08 (0.18 lb) |
| Wean weight, kg | 6.55 | 6.90 | +0.35 (0.77 lb) |

Table 2. Effects of Regano® on litters with diarrhea in 3 field investigations.

| Trial location | Scouring Litters (%) | | Reduction (%) |
|--------------------|----------------------|---------|---------------|
| | Control | Regano® | |
| Brazil | 95.8 | 77.3 | 19.3 |
| North Carolina (5) | 40.2 | 23.4 | 41.3 |
| Australia (6) | 17.0 | 0.60 | 95.6 |

Conclusions

- Regano® significantly reduced fecal *E. coli* shedding in test sows. Since most pathogens are transmitted from sow to her offspring via fecal-oral route, this reduction may have improved litter performance.
- The steady reduction in *E. coli* over time showed that gut health improved the longer the sows were fed Regano®.
- This confirms field experience showing continued improvement in sow and litter health when sows were fed Regano® for over several reproductive cycles.
- Prior sow trials with Regano® have shown that litters from Regano®-fed sows have lower incidence of scours than litters from control sows (Table 2).