Iron is a trace mineral supplemented in broiler diets. Bacterial pathogens, such as E. coli, C. perfringens and E. acervulina have an essential requirement for iron such that they have multiple sequestering mechanisms to obtain iron. This study was designed to evaluate the hypothesis that an organic form of iron (SQM Iron, QualiTech, Inc.) could limit the availability of iron to such pathogens and reduce their impact on broiler performance. A total of 2496 mixed sex broiler chicks (Ross 708) were randomly assigned to one of 48 pens (12 pens/replicate). Diets (corn-soy based) were formulated to meet industry standards for a Prestarter (0-7d), Grower (8-35d) and Finisher (36-42d) program. Treatments included 1) iron sulfate as the sole supplemental iron source (IONC), 2) SQM Iron instead of iron sulfate (IONC), 3) IONC receiving a pathogen challenge on day 7 (IOPC), and 4) OINC receiving a pathogen challenge on day 7 (IOPC). Broilers received Coccidiostat-Vac day 0. Sub-clinical challenge was provided by challenge on day 7 (IOPC), and 4) OINC receiving a pathogen challenge on day 7 (IOPC). Bacterial pathogens included: E. coli, C. perfringens and E. acervulina. Performance was measured every 7 days; lesion scoring, and bacterial counts were done on day 21 and 42. Broiler growth rate and performance under a pathogen challenge (bacterial and coccidial challenge), relating to age of litter (a minimum of three batches per age). The mode of action appears to be providing a highly bioavailable source of iron to the broilers while reducing the ability of microbial pathogens to utilize that same iron source for growth. Therefore, to reduce the impact of a subclinical microbial infection include SQM Iron in your trace mineral fortification program.

**Table 1. Results of iron source and bacterial challenge on broiler performance.**

| Item Sulfate SQM Sulfate SQM S EM Iron source Bacterial Interaction |
|---|---|---|---|---|---|---|---|
| Mortality, % | 0.01 | 0.28 | 0.28 | -0.03 | 0.16 | 0.16 | 0.02 |
| Eimeria Count (log 10) Day 21 | 0.22 | 0.16 | 0.16 | 0.02 | 0.24 | 0.24 | 0.16 |
| Eimeria Count (log 10) Day 42 | 0.16 | 0.16 | 0.16 | 0.02 | 0.24 | 0.24 | 0.16 |
| Objective Determine the influence of iron source on broiler performance when exposed to contaminated used litter.**

**Materials and Methods**

- 2x2 factorial arrangement of treatments (Iron source x bacterial challenge)
- Iron sulfate vs SQM Iron Fe; 20 ppm
- Control litter vs contaminated litter
- 2,496 mixed sex broiler chicks
- 48 pens total (52 chicks/pen)
- Starter (0-7 day), Grower (8-35 day), and Finisher (36-42 day)
- Mash form were based on corn and SBM.
- 42-d study, measurements 7, 14, 21, 35 and 42 days.
- The sub-clinical challenge (built-up litter and moderate stress conditions via bacterial and coccidial challenge), relating to age of litter (a minimum of three previous flocks), was obtained with built-up litter, containing a mixture of inoculum and E. acervulina (>50,000 oocysts/bird), Clostridium perfringens (>10^6 per bird) and E. coli (>10^6 per bird) bacteria were administered into the litter on Day 7.**

**Conclusions**

- SQM Iron maintained the performance of broilers when challenged with microbial pathogens.
- The mode of action appears to be providing a highly bioavailable source of iron to the broilers while reducing the ability of microbial pathogens to utilize that same iron source for growth.
- Therefore, to reduce the impact of a subclinical microbial infection include SQM Iron in your trace mineral fortification program.