

# SQM Iron – Compatible with live *Salmonella* vaccine in poultry



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## Introduction:

SQM Iron can reduce the abundance of *Salmonella* in the intestines of poultry when fed as a substitute for iron sulfate<sup>1</sup>. The PolyTransport technology in SQM Iron reduces availability of iron to pathogens<sup>2</sup> while increasing bioavailability to the host. This raises the question of whether SQM Iron might interfere with vaccines based on attenuated live *Salmonella*, under the reasoning that reduced availability of iron to the vaccine strain might reduce its efficacy.

## Trial Design<sup>3</sup>:

- 480 Hendrix-Genetics Laying Hens
- 12 pens/treatment and 10 birds/pen
- AviPro<sup>®</sup> Megan<sup>®</sup> Vac 1 administered on D0
- Spleens and livers collected on D5

## Treatments:

- 2 × 2 Factorial
- Vaccine Status (Vac vs Non-vac)
- Iron Source (FeSO<sub>4</sub> vs SQM Fe; 60ppm)

## Results:

- Recovered significantly more vaccine strain *Salmonella* from vaccinated birds
- No effect of Iron Source on prevalence of *Salmonella* in tissues
- No interaction between Iron Source and Vaccine Status

**Table.** Prevalence of Megan<sup>®</sup> Vac 1 in spleen and livers of 5 day old laying hens.

Vac Status	Fe Source	Prevalence	
Non-vac	FeSO <sub>4</sub>	2/24	(8.3%)
Non-vac	SQM Fe	3/24	(12.5%)
Vac	FeSO <sub>4</sub>	21/24	(87.5%)
Vac	SQM Fe	20/24	(83.3%)
Effect		Prob > Chi Square	
Vac Status		<0.0001	
Fe Source		0.7135	
Vac Status x Fe Source		0.7135	

## Discussion:

The ability of the *Salmonella typhimurium* vaccine to infect birds and translocate from the gut to the spleens and livers of laying hens was not inhibited by the source of iron in the diet. This is likely because birds in this trial were vaccinated on day of hatch, before being given access to feed and water, as is the standard procedure in the industry. By the time birds were placed on feed, the vaccine was likely already migrating to the liver and spleen.

## Conclusions:

Nutritionists can safely feed SQM Iron as a substitute for FeSO<sub>4</sub> to achieve the benefits of reduced pathogen load, without impacting the efficacy of a live *Salmonella* vaccination program.

## Citations:

1. Garrett & McNaughton. 2019. Poultry Sci. 98(E-Suppl. 1):212
2. Jendza. 2022. Multi-State Poultry Nutrition and Feeding Conference.
3. Trial performed at Virginia Diversified Research, Harrisonburg, VA