

Effect of Different Zinc Mineral Sources on Nutritional Bioavailability and Broiler Performance

Executive Summary

- Relative biological values (RBVs) of Zinc from GemStone® were 24% to 30% greater than zinc from zinc sulfate (Table 1).
- **GemStone** Zn RBVs were approximately 21% and 8% greater than zinc methionine complex and zinc amino acid complex respectively
- **GemStone** Zn RBVs were approximately 10% greater than alternate zinc glycinate

Materials and Methods

- 1,200 Ross 708 male broiler chicks reared in battery brooders with raised wire floors
- Supplemental Zn provided at 10, 20, 30 and 40 ppm above basal Zn (23.3 ppm)
- 8 birds/cage; 10 cages/treatment
- Broilers fed a semi-purified low Zn ration from 0-7 days of age (Zn depletion)
- Birds fed test diets from 8 – 21 days of age
- Live performance measured, tissue (bone, liver, pancreas) zinc determined

Treatments

- Negative Control: 10, 20 and 30 ppm Zn as Zn Oxide
- Positive Control: 0, 10, 20, 30 and 40 ppm Zn as Zn Sulfate
- **GemStone** Zn: 10, 20 and 30 ppm Zn as **GemStone** Zn
- OTM A: 10, 20 and 30 ppm Zn as zinc amino acid complex
- OTM B: 10, 20 and 30 ppm Zn as zinc methionine complex
- OTM C: 10, 20 and 30 ppm Zn as zinc glycinate

Technical Bulletin

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Results

Table 1. Estimated relative bioavailability of zinc sources for broiler chicks fed 0 – 21 days of age.

Relative Biological Values, %						
Variable	Zinc Oxide	Zinc Sulfate	GemStone Zn	Zinc Amino Acid Complex	Zinc Methionine	Zinc Glycinate
Body Weight	70.3	100.0	127.1	123.9	114.2	114.6
Bone Ash	74.9	100.0	129.2	115.9	117.2	114.4
Feed:Gain	87.4	100.0	129.6	121.3	101.9	120.1
Liver Zinc	88.4	100.0	126.1	118.0	103.0	110.9
Pancreas Zinc	68.9	100.0	124.3	116.0	97.2	121.9
Bone Zinc	77.4	100.0	130.1	124.3	105.3	126.3
Average	77.9	100.0	127.7	119.9	106.5	118.0