Research Brief

# Effects of Availa® Zn, Availa® ZM, and Availa® ZMC on Performance of Male Turkey Poults

ZINPRO®

## Study Objective

Evaluate the efficacy of feeding Availa® Zn, Availa® Z/M and Availa® ZMC on performance and bone health of male turkey poults

## Study Duration

0 to 50 days

## Animals

1,200 day old male Hybrid Converter turkey poults

## Treatments

| | Sulfates, ppm | | | ZPM, ppm | | |
|---|---|---|---|---|---|---|
| | Zn | Mn | Cu | Zn | Mn | Cu |
| Sulfates | 125 | 125 | 7 | - | - | - |
| Availa Zn | 65 | 125 | 7 | 60 | - | - |
| Availa ZM | 85 | 85 | 7 | 40 | 40 | - |
| Availa ZMC | 85 | 85 | - | 40 | 40 | 7 |

## Experimental Procedures

Complete Randomized Design with 4 dietary treatments, 12 replicates per treatment, 25 birds/ replicate. Data were analyzed by one-way ANOVA. Statements of statistical significance were based upon $P < 0.10$.

- Body gain (BWG), Feed intake (FI), Feed conversion ratio adjusted to mortality (FCR) were measured at 7, 19 and 50 days of age
- Tibias from turkeys at 50 days of age were sampled and analyzed for ash and TM content
- Measurements of the proximal tibia growth plate layer and histology were performed

## Location

University of Missouri, Columbia, USA

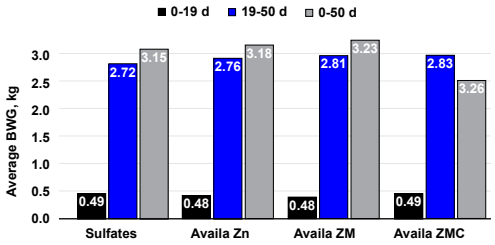
Birds housed in 40 ft² concrete floor pens containing 5" of dry clean pine wood shavings within an environmentally controlled facility

## Study 1

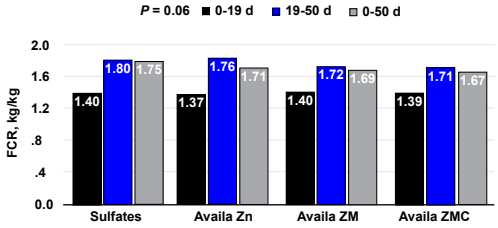
## Results

- Turkey poults fed Availa® Zn, Availa® ZM or Availa® ZMC from 0 to 50 days of age had numerical increase in BW gain and improved FCR ($P = 0.06$) compared with poults fed sulfate sources of trace minerals.
- Tibia ash percentage of birds fed sulfates and Availa Zn and Availa Z/M was greater ($P = 0.04$) than those consuming Availa ZMC, whereas tibia ash as a percent of BW was not different ($P > 0.2$). No histomorphometric differences were observed for the tibias at 50 days.

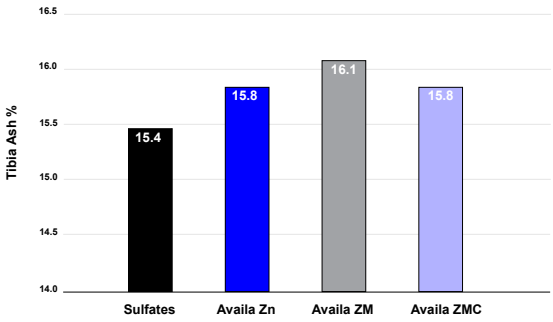
### Body Weight Gain of Poults to 50 Days




### Feed Conversion Ratio of Poults to 50 Days




### Percent Tibia Ash/kg BW




### ROI Calculation Over Sulfates - Calculated for Feeding 50,000 Turkeys

| $335.00 per MT | Control | Availa Zn | Availa ZM | Availa ZMC |
|---|---|---|---|---|
| FCR results of the trial | 1.745 | 1.707 | 1.688 | 1.669 |
| FCR advantage (points) in the trial | n/a | 3.82 | 5.73 | 7.63 |
| Cost of 1 point of FCR/MT of feed produced | 1.968 | 1.968 | 1.968 | 1.968 |
| Cost to add ZPM ($/MT) | n/a | 1.90 | 2.72 | 3.05 |
| Profit of FCR advantage (cost of MT saved) | | 2051 | 3076 | 4096 |
| Cost to include ZPM based on MT needed | | 520 | 736 | 4096 |
| ROI Calculation over Sulfates | | 3.95 | 4.18 | 5.02 |
| MT of feed (BW x FCR x 50,000) | 279.6 | 273.5 | 270.5 | 267.4 |
| MT differential (from improved FCR) | n/a | 6.12 | 9.18 | 12.23 |

## Conclusions

- Birds consuming supplemental trace mineral amino acid complexes were observed to have statistically improved FCR and numerically better BWG
- Improving first weeks' general health conditions represents an opportunity for turkey production. Intestinal health, immune response and skeleton development are closely related. Feeding Zinpro Performance Minerals (ZPM) represent an opportunity to support those important systems and tissues, with substantial Return of Investment (ROI) on FCR over sulfate supplementation

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Research Brief

# Effects of Availa® Zn, Availa® ZM, and Availa® ZMC on Progeny Performance of Male Turkey Poults, from Turkey Breeders Fed Availa ZMC

ZINPRO®

## Study Objective

Evaluate the efficacy of feeding Availa® Zn, Availa® Z/M and Availa® ZMC on performance and bone health of male turkey poults to 13 weeks of age.

## Study Duration

0 to 13 weeks

## Animals

1,248 day old male Hybrid Converter turkey poults

## Treatments

| | Sulfates, ppm | | | ZPM, ppm | | |
|---|---|---|---|---|---|---|
| Progeny Treatment | Zn | Mn | Cu | Zn | Mn | Cu |
| Sulfates | 125 | 125 | 7 | - | - | - |
| Availa Zn | 65 | 125 | 7 | 60 | - | - |
| Availa ZM | 85 | 85 | 7 | 40 | 40 | - |
| Availa ZMC | 85 | 85 | - | 50 | 40 | 7 |
| Sulfates | 125 | 125 | 7 | - | - | - |
| Availa Zn | 65 | 125 | 7 | 60 | - | - |
| Availa ZM | 85 | 85 | 7 | 40 | 40 | - |
| Availa ZMC | 85 | 85 | - | 40 | 40 | 7 |

The first 4 treatments did not have ZPM in the breeder diet
The last 4 treatments had ZPM in the breeder diet

## Experimental Procedures

Randomized Factorial Design with Blocks: with 2 Breeder treatments x 4 Progeny treatments. Data were analyzed using PROC Mixed procedure, mean differences analyzed by LSD test, statements of statistical significance were based upon $P < 0.10$

- BW, FI, FCR were measured at 7, 21, 49, 70, and 91 days of age
- Tibias from turkeys at 112 days of age were sampled and analyzed for ash and TM content
- Measurements of the proximal tibia growth plate layer and histology were performed

## Location

University of Missouri, Columbia, USA

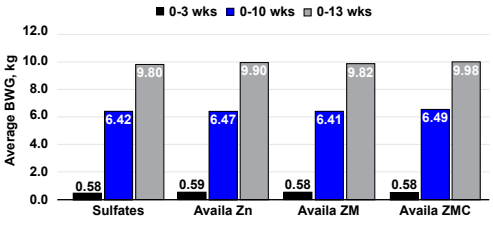
Birds housed in 40 ft² concrete floor pens containing 5" of dry clean pine wood shavings within an environmentally controlled facility

## Study 2

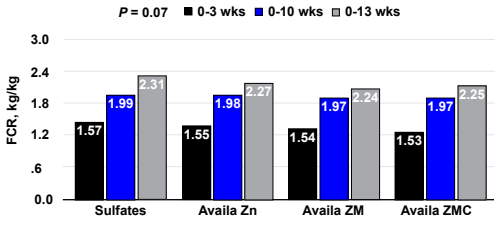
## Results

- Turkey poults fed Availa® Zn, Availa® ZM or Availa® ZMC from 0 to 50 days of age had numerical increase in BW gain and improved FCR ($P = 0.06$) compared with poults fed sulfate sources of trace minerals).
- Tibia ash percentage of birds fed sulfates and Availa Zn and Availa Z/M was greater ($P = 0.04$) than those consuming Availa ZMC, whereas tibia ash as a percent of BW was not different ($P > 0.2$). No histomorphometric differences were observed for the tibias at 50 days.

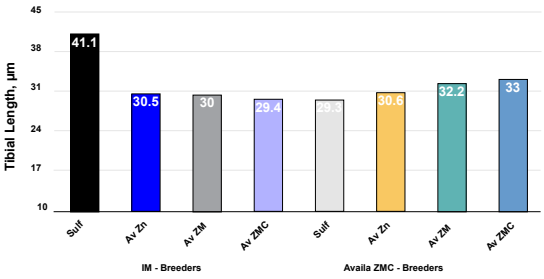
### Body Weight Gain of Poults 0 to 13 weeks




### Feed Conversion Ratio of Poults from 0 to 13 weeks




### 112-day Tibia Proliferative Zone Length (40x)




### ROI Calculation Over Sulfates - Calculated for Feeding 50,000 Turkeys

| $264.66 per MT | Control | Availa Zn | Availa ZM | Availa ZMC |
|---|---|---|---|---|
| FCR results of the trial | 2.306 | 2.255 | 2.240 | 2.248 |
| FCR advantage (points) in the trial | n/a | 4.085 | 6.640 | 5.845 |
| Cost of 1 point of FCR/MT of feed produced | 1.142 | 1.142 | 1.142 | 1.142 |
| Cost to add ZPM ($/MT) | n/a | 1.90 | 2.72 | 3.05 |
| Profit of FCR advantage (cost of MT saved) | | 5317 | 8559 | 3360 |
| Cost to include ZPM based on MT needed | | 2109 | 2.87 | 2.84 |
| ROI Calculation over Sulfates | | 2.52 | 2.87 | 2.24 |
| MT of feed (BW x FCR x 50,000) | 1129.94 | 1109.85 | 1097.6 | 1101.52 |
| MT differential (from improved FCR) | n/a | 20.09 | 32.34 | 28.42 |

## Conclusions

- Birds consuming supplemental trace mineral amino acid complexes were observed to have statistically improved FCR and numerically better BWG
- Improving first weeks' general health conditions represents an opportunity for turkey production. Intestinal health, immune response and skeleton development are closely related. Feeding Zinpro Performance Minerals (ZPM) represent an opportunity to support those important systems and tissues, with substantial Return of Investment (ROI) on FCR over sulfate supplementation

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