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REVIEW OF STUDY:  
BENEFITS OF MLG-50™ ON FRYER-BROILER CHICKENS  
WHEN ADMINISTERED IN DRINKING WATER  
FROM HATCHING THROUGH SIX WEEKS OF AGE

STUDY CONDUCTED 2015 BY:  
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Minerals play a critical role in maintaining the optimal activity and structural integrity of metabolic enzymes required for cellular respiration including the regulation of body functions, keeping the body healthy and promoting resistance to disease [1]. As a group, minerals are one of the four groups of essential nutrients; the others are vitamins, essential fatty acids, and essential amino acids [2, 3].

AgTonik offers pure water extracted trace mineral supplement AGT-50 (formerly MLG-50™), a natural source fulvic-acid extract, that contains a full spectrum of approximately 70 minerals, 33 naturally occurring organic acids including amino acids, trace minerals, trace elements, and electrolytes.

A study on 207 Cornish Rock Straight Run chickens was performed to determine the health benefits (growth, feathering, and immune robustness) of supplementing the drinking water with MGL-50\*. Hatchlings were divided into three groups and monitored.

Respiratory distress was identified in 20 of the 47 chickens from the control Group I during the 5<sup>th</sup> week of the study, whereas no signs of respiratory distress were observed from either Group II & III receiving the MLG-50\* supplement.

Respiratory distress is a sign of an underlying disease in chickens that left untreated will lead to death [4].

To prevent the Group I chickens with respiratory distress from further deterioration they were switched to water supplemented with 2 ml/gallon MLG-50\*. Within 5 days all the chickens with respiratory distress from Group I recovered and excluded from the remainder of the study. Therefore, the control Group I consisted of 27 chickens during the 5<sup>th</sup> week of study. The overall average body weight of the chickens at 2, 4, and 6 weeks, for Group I, II and III respectively, were 11.8, 12.2, and 12.1 ounces; 2.42, 2.43 and 2.40 pounds; and 4.99, 5.27 and 5.29 pounds.



#### Feathering:

At 2 and 4 weeks feathering was significantly more advanced; at 6 weeks more dense on palpitation in the MLG-50\* Groups. Dosing with MLG-50\* applied to the drinking water at two different concentrations did not appear to contribute to differences in feathering between Group II & III.

#### Immune Health:

At 6 weeks of age, the chickens from all three control groups were weighed and harvested. All chickens were healthy, and, upon careful inspection of the viscera, no signs of disease or pathology were present.

Histological sections of the Bursa of Fabricius from chickens at 2, 4, and 6 weeks of age in Groups I, II and III was harvested and compared microscopically. The Bursa of Fabricius is a specialized organ that is necessary for immune cell development in birds. The number and size of the lymphocyte B-cell type cells, involved in immune function, is an indicator of overall immune health and plays an essential role in humoral immunity.

Histological sections of the Bursa of Fabricius from chickens at 2, 4 and 6 weeks of age from Groups I, II, and III were compared microscopically. Large B-cells were stimulated in the Bursa of Fabricius in Groups II & III with more significant stimulation of the B-cells in chickens supplemented with 2 ml/gallon MGL-50 in Group III as compared to Group II supplemented with 1 ml/gallon MGL-50\*. Smaller B-cells were observed in the un-supplemented Group I as compared to both Groups II & III.

#### Discussion

This study conclusively demonstrates that supplementation with MGL-50\*, at either concentration, dramatically improves the overall health of the Cornish Rock Straight Runs as compared to those receiving no trace mineral supplementation.

By the end of the study, the body weights of chickens receiving trace mineral supplementation were 5% (Group II) and 6% (Group III) heavier than chickens without trace mineral supplements.

Moreover, chickens receiving trace minerals had significantly advanced feathering, increased weight, and stimulation of B-cells, as compared to the control group, and are indicators of excellent overall health.

Furthermore, the Group I chickens suffering respiratory distress were brought back to health within 5 days after receiving trace mineral supplements.

This result is remarkable and further supports the notion that trace element supplements support humoral health. The Purina Chicken & Grow Sunfresh, 18% protein poultry feed is supplemented with only 4 trace elements, calcium, phosphorous, sodium, and chloride and 2 amino acids, lysine, and methionine, known to



be essential for growth. However it is known that five major minerals are essential for the normal biological function and growth including, phosphorous, calcium, potassium, sodium and magnesium.

Moreover, indispensable trace elements are also essential and include sulfur, iron, chloride, cobalt, copper, zinc, manganese, iodide, and selenium [2].

It is clear from this study that the lack of the full complement of trace element supplementation in the chicken feed significantly compromised the overall health of the chickens. It would be of great benefit to the poultry industry to supplement chicken feeds with trace minerals such as MGL-50\*.

Supplementation would provide greater profitability to the poultry industry by preventing loss due to disease, environmental stress and by obtaining a significant increase in broiler weight in a considerably reduced period.

Note \* MLG-50 name has been changed to AGT-50 2019

1. Berg J.M., T.J.L., Stryer L., *Biochemistry 5th Edition*. 2002, WH Freeman and Company: New York.
2. Higdon, J. *An Evidence-based Approach to Vitamins and Minerals: Health Benefits and Intake Recommendations*. [Hardback] [cited 2011; 2nd:[Available from: <http://pi.oregonstate.edu/mic/minerals>.
3. Kelly M. Adams, e.a., *Handbook of Nutrition and Food*. 1 ed, J.T.D. Carolyn D. Berdanier, David Hebe. 2014, Boca Raton, London, New York: CRC Press, Taylor and Francis Group. 1092.
4. B.P., S., *Common Respiratory Diseases of Poultry*. Veterinary World, 2008. 1(7): p. 217-219.