

The Evaluation of a Natural Mineral Product (AZOMITE®) When Fed to Broilers



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Introduction

In recent years, Poultry producers have felt the pressure from the consumers to provide the market with a product that is fed more natural and organic ingredients. The push for natural poultry products has lead researchers to evaluate the benefits of an array of natural products, which even includes the minerals used. One of these products is a natural mineral product (AZOMITE®) that is mined from ancient mineral deposits from Utah, USA. AZOMITE® is not a new product, but one that has been used as a soil amendment to support plant growth and vitality for over seventy years. This product typically has over 70 different minerals and trace elements present and has been listed by the Organic Minerals Review Institute as a product for organic application purposes. AZOMITE® has also been used as a feed additive in livestock and aquaculture, which has drawn attention to the broiler industry.

Materials and Methods

A floor pen study with a four phase feeding program (starter 0 to 18d, grower 18 to 35d, finisher 35 to 42d and withdrawal 42 to 56d) was conducted. Broiler chicks were allocated to a randomized block design of 8 replications of 40 birds per pen and were each fed one of six dietary treatments. Two basal diets were formulated and from these diets increasing levels of AZOMITE® were used to create the following dietary treatments:

1. Positive Control- (no additive supplementation)
2. PC + 0.25% AZOMITE®
3. PC + 0.50% AZOMITE®
4. Negative Control- (PC- 10kcal/lb)
5. NC + 0.25% AZOMITE®
6. NC + 0.50% AZOMITE®

Feed and water were available ad libitum. Bird weights and feed consumption (kg) by pen were recorded at study initiation, Days 18, 35, 42 and 56. After the 56 d of age, 5 birds from each pen were randomly selected for processing to measure carcass and breast yield. The data were analyzed statistically using SAS software with a P value of 0.05 to determine the level of significance.

Results-Body Weight Gain

Treatment	0 to 18 d	0 to 35 d	0 to 42 d	0 to 56 d
	BWG(KG)			
PC ¹	0.614 ^{ab}	2.081 ^a	2.678	3.676
PC + 0.25% AZOMITE®	0.623 ^a	2.079 ^a	2.702	3.702
PC + 0.50% AZOMITE®	0.606 ^{ab}	2.066 ^a	2.680	3.712
NC ²	0.607 ^{ab}	2.031 ^{ab}	2.680	3.703
NC + 0.25% AZOMITE®	0.590 ^b	2.001 ^b	2.674	3.707
NC + 0.50% AZOMITE®	0.615 ^{ab}	2.061 ^a	2.699	3.738

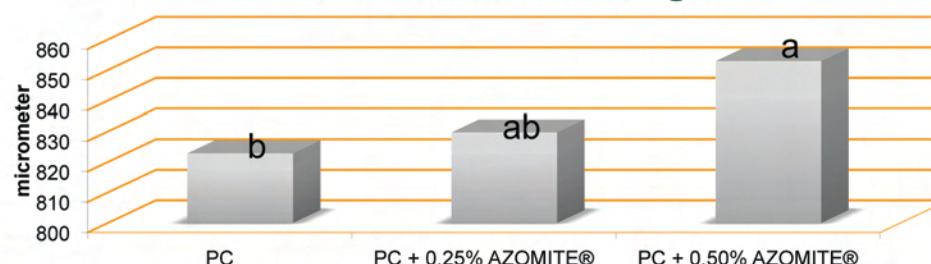
^{a-b} Means within column or group with no common superscript differ significantly (p < 0.05)

Results- Feed Conversion Ratio

Treatment	0 to 18 d	0 to 35 d	0 to 42 d	0 to 56 d
	FCR (KG:KG)			
PC ¹	1.319 ^{bc}	1.544 ^{bcd}	1.702 ^{ab}	2.030 ^b
PC + 0.25% AZOMITE®	1.306 ^c	1.534 ^{cd}	1.670 ^b	2.003 ^c
PC + 0.50% AZOMITE®	1.303 ^c	1.526 ^d	1.679 ^b	1.995 ^c
NC ²	1.361 ^a	1.607 ^a	1.727 ^a	2.063 ^a
NC + 0.25% AZOMITE®	1.353 ^{ab}	1.584 ^{ab}	1.695 ^{ab}	2.031 ^b
NC + 0.50% AZOMITE®	1.336 ^{abc}	1.580 ^{abc}	1.718 ^a	2.025 ^b

^{a-d} Means within column or group with no common superscript differ significantly (p < 0.05)

Duodenum Villi Height



^{a-b} Means with no common superscript differ significantly (p < 0.05)

The addition of AZOMITE® at either the 0.25% and 0.50% in a standard commercial grade diet significantly improved the FCR over the birds fed the PC diet. Furthermore, when the energy of a commercial diet is lowered by 10 kcal/lb the inclusion of AZOMITE® into the diet can improve the birds FCR levels comparable to those seen in the PC fed birds. Overall, there was no difference in BWG or carcass characteristics between any of the treatments, indicating that the benefits observed in FCR are due to the decrease in feed intake. Upon further examination through histology, there is a significant linear improvement in duodenal villi height with the increased inclusion of AZOMITE to a commercial diet. This increase in villi height may indicate an improvement in gut health and nutrient absorption resulting in FCR benefits.

Conclusion

The supplementation of AZOMITE® to commercial grade diets could be beneficial in improving intestinal nutrient absorption with increased villi height, which in turn can lead to feed conversion improvements in broiler chickens.

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Comment by Douglas W. Fodge, Ph.D., D. F. International LLC, Owner of the AZOMITE International website –

"The preceding summary is the Poster presented at the January 27-28, 2014 International Poultry Scientific Forum at the World Congress Center in Atlanta, Georgia. It was presented by Greg F. Mathis, Ph.D. of Southern Poultry Research, Inc. summarizing a large replicated study they completed. It should be noted that the AZOMITE® test feeds created by adding AZOMITE® on top of the control feeds were not adjusted to be iso-caloric or iso-nitrogenous and no kilocalories were attributed to AZOMITE®. Therefore, the test feeds with AZOMITE® added had lower kilocalories per kilo than the corresponding control feeds."