



Effects of dietary 25-OH vitamin D₃ and Canthaxanthin on the live performance, carcass yield and bone quality of commercial broilers

C. A. Lozano*, M. J. Zuidhof*, D. R. Korver*, I. I. Wenger*, W. Gomez⁽¹⁾

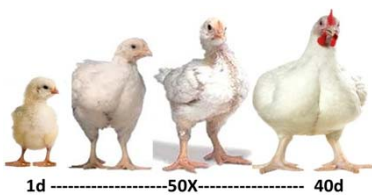
Project time line: September 2011 – December 2013

Summary

The broiler industry is looking for ways to improve profit through increased performance. New options for optimizing nutrition are necessary. **MaxiChick®** is a new additive composed of **25-OH-vitamin D₃ (Hy•D®)** and **canthaxanthin** (a synthetic carotenoid). Hy•D® increases bone quality, breast meat yield and interacts with the immune system and nutrient absorption. Canthaxanthin is a powerful anti-oxidant that reduces lipid peroxidation and enhances the total antioxidant capacity, which has the potential to improve performance, livability and chicken meat stability. Therefore, these two components together have potential benefits for poultry.

Problem

Today broilers have the capacity to increase their body weight from 40 g up to 2 kg (50-fold) in less than 40 days. They can also increase breast meat production 3.8 times faster than unselected birds.



However, undesirable traits such as cardiovascular diseases and skeletal disorders have emerged due to stress induced by such rapid growth rates. These conditions reduce overall flock performance, increase condemnations in slaughtering plants, cause welfare concerns, and reduce profitability in the poultry industry.

The purpose of this study was to evaluate the possible effect on broiler performance, meat yield and bone quality with the dietary inclusion of MaxiChick® in broiler chickens.

Our approach

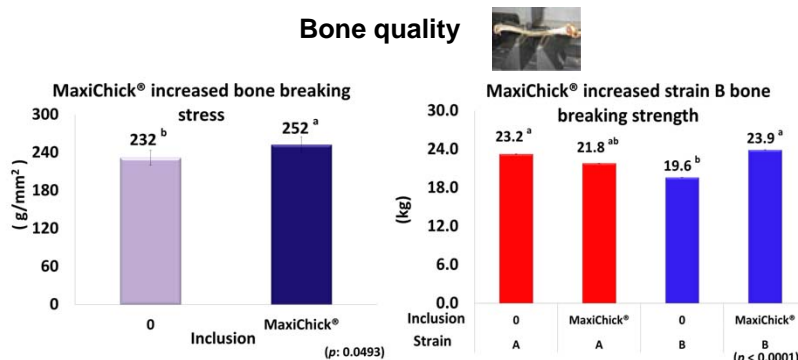
We ran a field trial with one of the largest broiler integrators in Colombia. One whole broiler cycle was followed, involving **4.9 million broilers** (two strains) from placement through processing in 372 barns (barn was the experimental unit). Two levels of MaxiChick® were added to the pre starter and starter diets (1-21d):



Our Observations

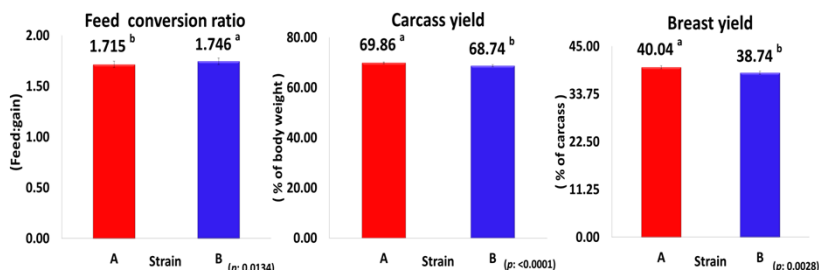
At processing age, none of the live performance variables (Body weight, feed intake, mortality, and feed conversion ratio) or meat yield were affected by the inclusion of MaxiChick® or by any interaction effect. Most of the significant differences in these traits were due to genetic and sex effects.

Bone quality



At processing age, **bone breaking stress** (force required to break a bone adjusting for cross-sectional area) was significantly higher in birds that received MaxiChick® during the first three weeks of age. Additionally, MaxiChick® significantly increased **bone breaking strength** (maximum force required to break a bone) in strain B, and this effect was clear for both sexes.

Productive performance



Strain A had greater feed efficiency (**-31 gr of feed per kg of gain**), higher carcass (**+1.63%**) and breast yields (**+3.35%**)

What does this mean?

A higher bone quality is essential for the best broiler performance. MaxiChick® **increased** bone quality especially in one strain, which could **reduce skeletal disorders and increase number of birds**, and therefore meat produced at market age.

These results also demonstrate that feed efficiency and carcass traits are strongly broiler strain dependent. Nowadays, there are different strains available. The key is to analyze available data and choose the best option to maximize economic profit.

Acknowledgements



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Contact Information



Carlos Lozano
(780)264 0051
E-mail: lozano@ualberta.ca

* University of Alberta, Edmonton, AB Canada
(1) Avides-Macpollo, Colombia.