

High quality trace minerals support improved breeder hen longevity

by Dr Ajay Bhojar, Senior Manager, Global Poultry Marketing, Novus International Inc.

A major element in profitability of both layer and broiler breeder poultry operations is hen longevity. As birds are usually pushed to produce more eggs for extended periods of time, that additional stress can lead to decreased performance, and even increased mortality. In order to support the birds' optimal performance, nutritional factors should be considered to provide a stable basis from which the birds can perform.

Longevity accounts for the number of days of life of a breeder hen. It is the time period between the date of housing and death, or removal from the house. Optimal longevity includes low culling and mortality rates, consistent egg production throughout the entire lay cycle, as well as maintained production during the late lay period.

In order to remain highly productive throughout the entire lay cycle, the birds' immune systems and tissue integrity must remain in peak condition. Healthy birds remain in production longer, and optimal nutrition is a prerequisite for optimal breeder performance. In the breeder diet, trace minerals are a vital component to support the overall production performance of the breeder stock. This is when utilising high quality trace minerals become most important.

Optimal tissue integrity

Trace minerals play a key role in maintaining optimal immune activity and tissue integrity in poultry. Trace minerals such as zinc, copper and manganese are required to ensure the health and continued optimal productivity of the bird.

- Zinc is essential to a wide variety of processes, including the synthesis of collagen and keratin. It is also important to the development and function of the bird's immune system. Zinc deficiencies can lead to bone abnormalities, decreased tissue strength and decreased immune function, which can all negatively impact hen longevity.

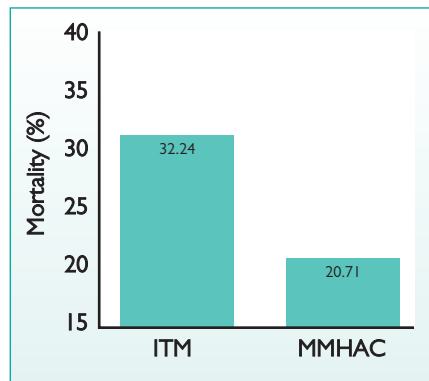


Fig. 1. Comparison of mortality in broiler breeders fed metal methionine hydroxy analogue chelate (MMHAC) vs inorganic trace mineral (ITM).

- Similarly to zinc, copper is a necessary component for tissue formation. Copper supports skin, bone, tendon and intestinal strength, through its function in enzymes responsible for cross linking collagen and keratin tissue. Deficiencies in copper can cause weak bones and increased bone breakage.
- Manganese is essential for bone development, as it is required for forming the proteoglycan matrix in which collagen and elastin are embedded within the bone. Proper development of this matrix is required to allow for later stages of bone development in the animal.

Fig. 3. Percentage of under-grade eggs produced when fed MMHAC vs control diet and competitor ITM product.

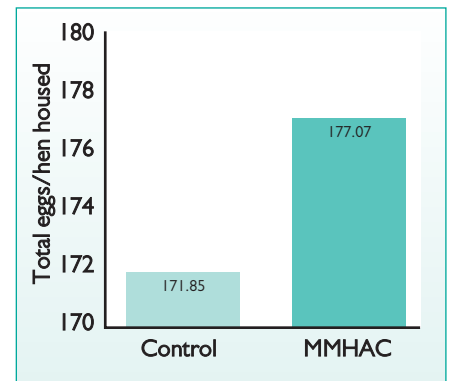
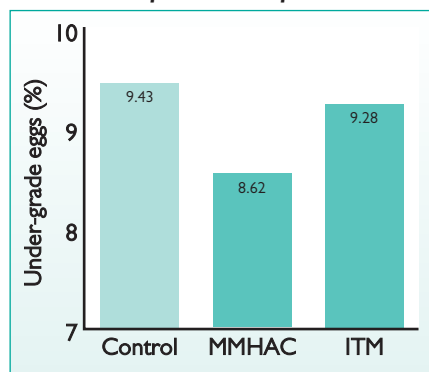


Fig. 2. Total eggs produced per housed hen fed MMHAC vs control diet.

These three trace minerals play a role, either individually or in combination, in maintaining optimal tissue integrity in the animal. As these trace minerals are vital to tissue formation and development, it is essential to supply the best source of minerals to the bird.

Supplementing the diet with highly bioavailable chelated trace minerals allows the bird to get the most use of the mineral, compared to supplementing inorganic trace mineral (ITM) sources.

While the importance of these trace minerals is well known throughout the industry, increasing amounts of evidence show trace mineral requirements of the animal are not consistently met by including inorganic forms of these minerals.

Further, various stress factors increase the requirement of these important minerals. Inorganic sources of trace minerals are often prone to antagonisms when used in increased dose levels, resulting in even lower bioavailability. By providing a more bioavailable source of minerals, chelated trace mineral supplementation supports improved animal performance. A chelated trace mineral source, such as Metal Methionine Hydroxy Analogue Chelate (MMHAC), can ensure a greater supply of key nutrients to the bird for optimal tissue development and immune integrity.

Research conducted with broiler breeders from 18 weeks to 59 weeks of age, shows including MMHAC in the diet decreased

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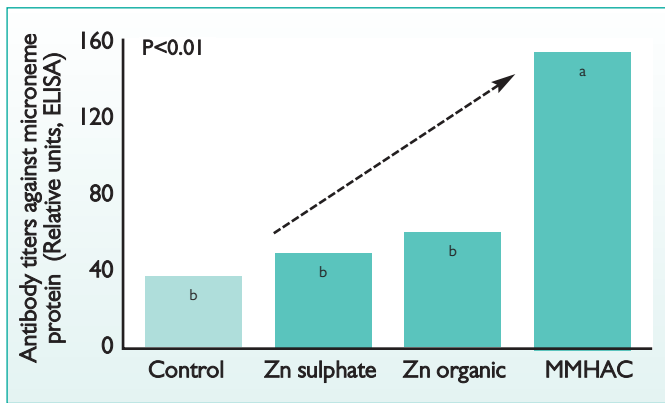


Fig. 4. Enhanced coccidiosis immune response with MMHAC supplementation.

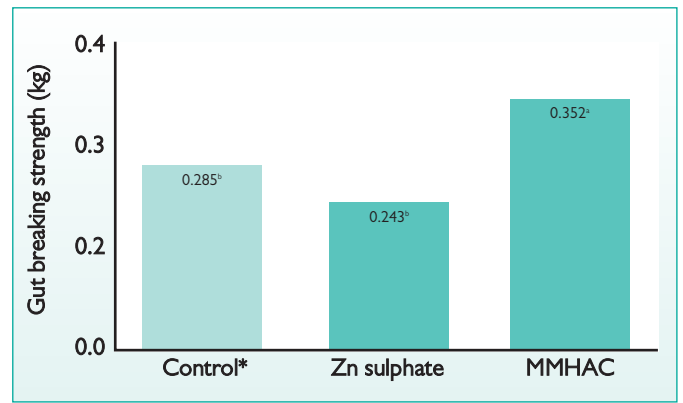


Fig. 5. Enhanced intestinal strength with MMHAC supplementation (*basal mineral content in feed).

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mortality by 13.53% compared to breeder hens fed inorganic trace minerals (Fig. 1).

When analysing egg production, hens fed MMHAC increased the number of total eggs produced per housed hen (Fig. 2).

Supplementing with MMHAC also reduced the production of under-grade eggs, which can include broken, fissured and dirty eggs (Fig. 3). Most important to breeder longevity, trace minerals can have a direct impact through improved immune response.

More specifically, most adequate immune systems are due to strong gut health and tissue integrity. When fed MMHAC, data

show broiler breeders have an enhanced coccidiosis immune response after being challenged with all three *Eimeria* species on day 24 (Fig. 4). As a factor of tissue integrity and gut health, intestinal strength also provides a measure to ensure adequate supplementation of trace minerals is being provided.

Trial results show birds supplemented with MMHAC have improved strength of the jejunum portion of the gut (Fig. 5). Given today's intensive production system and consequential pressure for birds to continually meet performance parameters under various stressors, optimal trace

mineral nutrition is more important than ever. In order for birds to maintain peak performance and produce the desired quality of eggs for longer periods of time, producers should look at all potential avenues to solve breeder longevity issues.

Utilising high quality chelated trace minerals, such as MMHAC, increases flock longevity by supporting a strong immune system and tissue integrity, resulting in optimum production of quality eggs, with improved hatchability and chick quality. MMHAC provides a thorough trace mineral supplementation approach to address this prevalent industry pain. ■