

THE ROLE OF B COMPLEX VITAMINS, VITAMIN E AND SELENIUM SUPPLEMENTATION IN INTENSIVE POULTRY FARMING

Ensure to birds of any age and productive stage an optimal supply of essential nutrients is crucial for wellbeing, development and productivity.

The B complex vitamins are water soluble and not stored to any significant extent in the body.

They act in a broad range of metabolic pathways. Simple deficiency is now rare as diets are usually well supplemented.

However, because a continuous supply is required, damage to the intestine or increased demand for some reason may occur and have severe effects. Most will reduce productivity, including growth in the young animal, and egg production in the layer.

The embryo is particularly dependent on having adequate supplies of vitamins deposited in the egg.

Vitamin B deficiencies are especially prone to cause problems of hatchability.

B1 vit. deficiency leads to anorexia and in most severe and prolonged cases, to polyneuritis with lethargy, tremors, weakness and convulsion (1).

Field evidences showed how vit. B2 deficiency leads to leg paralysis, high mortality and poor growth in broiler chicks (2) and how this vitamin can improve the bioavailability of inorganic Cu, Zn and Mn in growing turkeys, while reducing the concentration of these trace elements in bird excreta (3).

Moreover, the pivotal role played by B2 vit. supplementation in egg production, hatchability and embryo survival rate was understood since 1930 (4).

B6 vit. is extremely important in the metabolic process of essential AA conversion (5) and its deficiency cause retarded growth, dermatitis and anemia, increased nitrogen excretion and disturbance in copper and iron serum levels.

Furthermore, as other vitamins belonging to B group, B6 is essential in maintaining regular appetite, hatchability and egg production (1).

Likewise, vit. E is another essential nutrient playing a vital role in many processes thanks to its strong antioxidant power: it can contribute to improve Haugh unit score and egg production, can increase serum concentration of CA, P and Zn protecting the liver by oxidative damage induced by Heat Stress (HS) and exerts a positive stimulation on the immune system, favoring antibodies production and macrophages activity (6).

A strong antioxidant effect is attributed to Selenium (Se) as well: this nutrient has a special place among natural anti-oxidants, being integral part of selenoproteins participating in the regulation of various physiological processes in the body.

As a major intracellular antioxidant defense, Selenium capability of protecting immune cells more susceptible to stress, like those of immune organs plays a crucial role in immune response: Selenium supplementation improved production of antibodies and macrophages while positively influencing cytokines production, often disturbed during stressful events (6, 7, 8).



An optimal dietary supplementation of Selenium has been found to improve feed intake, body weight gain, feed efficiency, egg production and performance of progeny, quality and antioxidant status in heat stressed poultry and normal hatchability (7).

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