International Poultry Production

Poultryhealth BYTES

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Broiler Breeder 2019

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Number: 223

Vitamin A II

Boehringer Ingelheim

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Signs of deficiency

In the embryo, vitamin A deficiency causes a grossly abnormal cardiovascular system. This is typified by an absence of vascular network and a grossly enlarged, non-compartmentalised randomly positioned heart without an inflow tract at the posterior side. Embryos die in the first week of incubation and in those that survive many are too weak to hatch or die shortly after hatching.

Growing poults and chicks which have a severe deficiency of vitamin A show depressed growth, depression, inappetence, poor thrift, deaths due to concurrent infections, unsteady gait and postural imbalance. If there is no accompanying infectious disease, vitamin A deficiency can cause damage to the epithelial lining of the oropharynx and oesophagus without significant effects to growth rate. Sometimes swelling around the eyes can be seen due to oedema.

In severe deficiencies hyperproliferation, with a reduction in the number of goblet cells and associated villi damage, will reduce production of bush border enzymes in the intestines resulting in impaired growth. In the acute form of vitamin A deficiency lachrymation (production of tears) occurs and caseous material can accumulate under the eyelids. Vitamin A deficiency can adversely affect the development of the bursa of Fabricius and thymus. The resulting immunodeficiency can favour the development of diseases like Newcastle disease, colisepticaemia, tuberculosis, candidiasis and salmonella infections. These can kill the bird before signs of vitamin A deficiency become apparent.

However, it should be noted that vitamin A can be stored in relatively large amounts in the liver and this means it can take 2-5 months for deficiency signs to appear in adult turkeys and chickens. Vitamin A deficient hens show weakness, weight loss, ruffled feathers and a sharp drop in egg numbers as well as an increased incidence of blood spots in eggs and an increased susceptibility to infection.

If deficiency persists, eye changes similar to those described above can be seen and eyelids may stick together. Prolonged vitamin A deficiency can be associated with an increased frequency of atretic follicles in mature hens.

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