

Possible reasons for black tongue in poultry

The condition described as black tongue was first reported by field veterinarians working in South and Central America in 2001 (Gonzalez-Escobar 2001). The condition occurs with necrosis of the tongue of varying degrees often affecting the very tip of the tongue, but can be of varying size. This new condition differs from niacin hypovitaminosis in that there is no inflammation of the oral cavity or oesophagus but affects just the anterior part of the tongue. Whilst the etiology of the condition has not been verified it has been suggested that type A trichothecene toxicosis could be implicated in this condition and where it occurs mycotoxin analysis for this type of trichothecenes should be considered as part of the diagnosis.

The trichothecenes group of mycotoxins is the largest group of mycotoxins comprising of more than 170 different molecules many of which have still to be studied for their toxicity and effects in poultry production. They are “field“ mycotoxins produced on the growing grains prior to harvest mainly from *Fusarium spp* moulds which are prevalent on a worldwide basis. *F graminearum*, *F culmorum* and *F poae* are the main cereal based *Fusarium spp* to produce trichothecenes mycotoxins, which are subdivided into type-A and type-B groups. Type A trichothecenes are among the most toxic of the mycotoxins to affect chickens and the group comprises of T-2 toxin, HT-2 toxin, 4,15-diacetoxyscirpenol [DAS] and neosolaniol. Of these DAS is the most toxic with an LD₅₀ of 2.0mg/kg in day old chicks.

Diaz (2002) studied the effect of DAS on growing chickens at 1.0 and 2.0mg/kg inclusion rates and noted necrotic lesions on the tongues of the birds similar to those reported by field veterinarians at both levels of DAS inclusion. However in an earlier experiment, in laying hens, including both DAS and T-2 toxin lesions were reported in the buccal cavity and on the tongue but no mention was made of any necrosis of the tongues (Diaz *et al* 1994) However, lesions were seen to develop in some birds after only 24 hours of being fed contaminated diets (8/30) and an additive effect in regard to beak/tongue lesions was seen between DAS and T-2 toxin.

In the 2002 study Diaz incorporated Biomin Mycofix® into the experimental diets and found that it did reduce the effects of the toxin in regard to growth rate and feed efficiency especially



at the lower contamination rate. However beak and tongue lesions were seen in all groups leading to the suggestion that the negative effects in growth are not caused by the lesions but by the systemic adsorption of the mycotoxin. Similarly the fact that the efficacy of Biomin Mycofix® was reduced when DAS was added at 2mg/kg suggested that the inclusion rate needed to be increased to cope with this higher level of contamination.

References

Diaz G. J. (2002) Evaluation of the efficacy of a feed additive to ameliorate the toxic effects of 4,15-diacetoxyscirpenol in growing chicks. Poul. Sci. 81:1492-1495

Diaz G.J., Squires E. J., Julian R. J. And Boermans H.J. (1994) Individual and combined effects of T-2 toxin and DAS in laying hens. Br. Poul. Sci. (1994) 35; 393 - 405

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