

Comparison of a tiamulin medication program with ts-11 mycoplasma vaccine on the control of *M. gallisepticum* in broiler breeders

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Introduction – Mycoplasma flock control

In all continents except Europe, Mg is still one of the top 6 diseases causing damage to the poultry industry. This applies to Mg, Ms and Mm and disease occurs frequently in all poultry types pullet, layer, breeder, broiler, turkey and ducks (W.v.d. Sluis 1997).

Mycoplasma gallisepticum (MG) can have a major effect on a broiler breeder flock's performance, and even more on the progeny of these flocks. Eradication of Mycoplasma from the breeding flock pyramid is the best way of controlling the disease nationally but this has not been achieved worldwide. In countries where parent flocks are still infected, medication of the flock and eggs to lower the level of disease transmission and prevention of clinical disease in the growing chicks with antibiotics is the commonest approach.

Medication has been widely used to control the infection and more recently, in endemically infected areas, the use of live vaccination with adapted isolates of MG, such as ts-11 (VaxSafe, Bioproperties Ltd) has been introduced.

Furthermore hygiene and management measures should be implemented, including strict biosecurity. Besides these measures, vaccination with live and inactivated MG vaccines is applied to protect flocks against MG infections.

Materials and methods

A comparison was made between one house of 2200 birds given ts-11 vaccine at 6 weeks of age with a similar house given routine tiamulin (Tiamutin 45 %, Novartis AH) medication, on a multi-age breeder layer site. Tiamulin was given in the drinking water for 1 day/week at 12.5mg/kg bodyweight in weeks 6, 8, 9, 10, 13, 14 and 2 days/week in weeks 15, 17, 19, 22, 23 (point of lay) and 30 (peak laying). It was also given in the feed at 50ppm for 10 days in week 32 and 60ppm for 28 days starting in week 42. Both groups of birds grew well in the rearing period but at week 22, as they were approaching point of lay, the vaccinated birds showed increasing signs of respiratory disease, attributed to MG. The vaccinated birds were then included into the tiamulin medication program consisting of 12.5 mg/kg bwt for 2 days per week during week 22, 23 and 30.

Table 1. Treatment schedule

Age(Week)	Farm	H.1	H.2	MG vaccine
6		Tiamulin (1) ^{*1}	Tiamulin (1)	ts-11
7		Tiamulin (1)	-	-
8		Tiamulin (1)	Tiamulin (1)	-
9		Tiamulin (1)	Tiamulin (1)	-
10		Tiamulin (1)	Tiamulin (1)	-
13		Tiamulin (1)	Tiamulin (1)	-
14		Tiamulin (1)	Tiamulin (1)	-
15		Tiamulin (2)	Tiamulin (2)	-
17		Tiamulin (2)	Tiamulin (2)	-
19		Tiamulin (2)	Tiamulin (2)	-
22		Tiamulin (2)	Tiamulin (2)	Tiamulin (2)
23		Tiamulin (2)	Tiamulin (2)	Tiamulin (2)
30		Tiamulin (2)	Tiamulin (2)	Tiamulin (2)
32	{ 10 days Tiamulin 50ppm in feed			
33				
42	{ 26 days Tiamulin 60ppm in feed			
43				

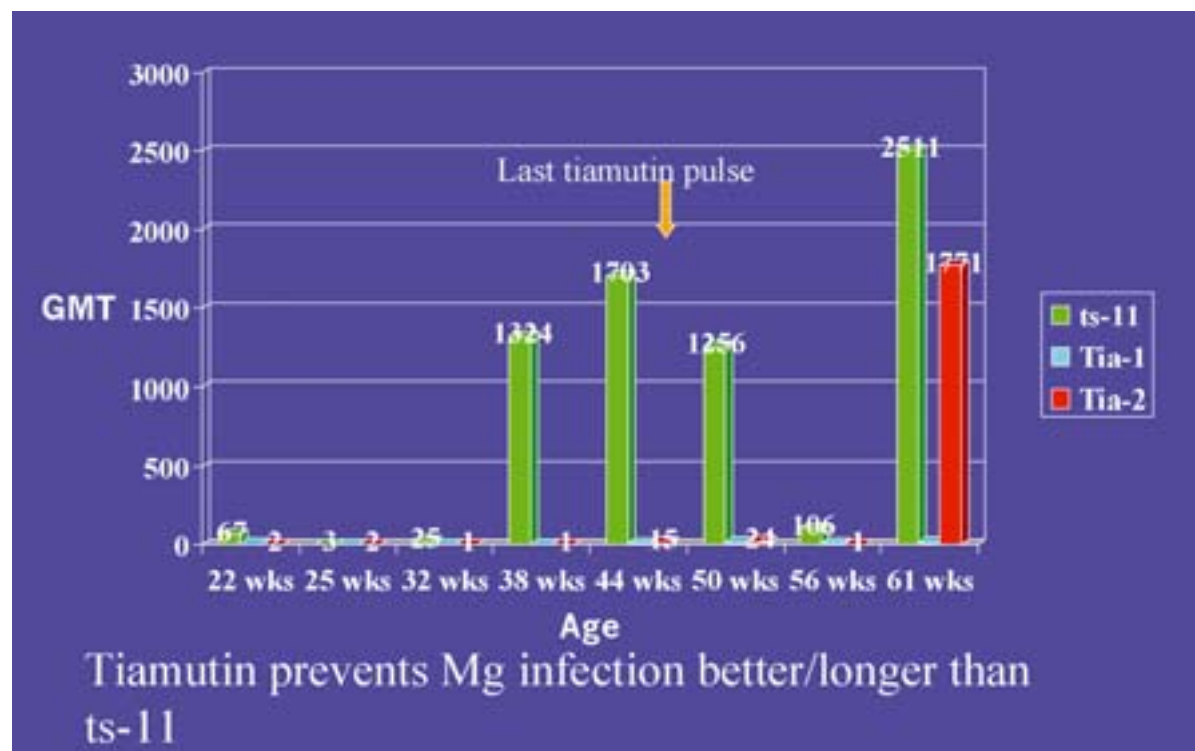
^{*1} number of day by drinking water

Results

At week 36 there was a spike in mortality in the vaccinated group (1.5%) due to CRD, whereas the tiamulin group's was 0.37%, i.e. near the target of 0.25%. Blood samples had been taken of 40 birds per flock on weeks 22, 29, 32, 28, 44 and 50 and analysed of MG antibodies by KPL Elisa test. Less than 5 % of either of the flocks was positive for MG at week 22. The proportion of the vaccinated flock, that was seropositive for MG increased to 63% positive by week 38 and 95% by week 44, while the proportion in the tiamulin controls still remained 5%.

Overall, the ts-11 and tiamulin produced 4.5 and 5.5 eggs/hen respectively more than target (189.6) respectively, during the 44-week laying period, as the onset of lay and peak was almost 3 weeks earlier. Vaccination with ts-11 did not prevent an MG infection developing on this farm, as was shown by titer development from week 22 onwards, with peak titers from 38 weeks onwards. Pulse treatment with Tiamutin prevented titer development in both flocks. Significant titer development took place only at 61 weeks of age i.e. 15 weeks after the last pulse dose of Tiamutin.

Graph 1. Trial results Mg titers



Conclusion

Tiamutin prevented egg production loss and mortality due to CRD better than vaccination with Ts-11. MG titer development due to MG infections took place later than in the vaccinated groups, and only after the Tiamutin prevention programme was stopped.

Further information on the Tiamutin® (tiamulin) range of products is available from the Poultry Products Manager at Novartis Animal Health operations in over 50 countries worldwide.