# WHY NOT WITHIN FIRST WEEK? SUCCESS CASES OF EARLY VACCINATION WITH A LIVE MYCOPLASMA *GALLISEPTICUM* VACCINE IN ASIA.

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# Introduction

The control of Mycoplasma *gallisepticum* (Mg) should be primarily based on biosecurity measures and maintaining breeding stock free of infection, but in most Asian countries, due to the high Mg prevalence within multiple-age farms, live Mg vaccines are massively used. Live vaccines can prevent production losses by allowing controlled exposure of flocks to low-virulence Mg strains, resulting in the development of immunity to subsequent field challenges. From an immunological perspective commonsense the vaccination should occur before the field challenge, meanwhile mostly of commercially available live vaccines, are recommended to be applied from 3 weeks of age onwards – sometimes too late for curbing the early Mg challenge. This field study was conducted to assess the molecular epidemiology, clinical signs, and macroscopic lesions, of early vaccination (5-7 days old) with a live Mycoplasma gallisepticum strain K5831 B-19 (K-Strain) in comparison with previous flock vaccinated with live F-strain in commercial layers chickens raised in high Mg challenge area in Nepal and Myanmar.

# Fig.1. Trial design



# **Materials and Methods**

The field study was conducted from October 2020 to April 2022 on 28 commercial layers chicken houses (total  $\approx$  90,000) in Nepal (18 farms) and Myanmar (10 farms). The survey timeline was designed in 3 separated events (flocks) for the same farms: 1) Flock vaccinated with F-Strain at 3-4 weeks of age by Eye-drop (ED) or spray; 2) Flock vaccinated exclusively with inactivated Mg vaccine and 3) Flock vaccinated with K-strain at 5-7 days of age by ED. It is important to highlight that the cycle that chickens were vaccinated with inactivated vaccine only was designed to be a " live Mg vaccine downtime ". At the age of 1, 3, 6 and 23 weeks, 3-5 birds showing any respiratory clinical signs were necropsied to check air sacs lesions and choanal cleft/ trachea sampling (swab) for PCR analysis at Lohmann Diagnostics Germany GmbH. All data were submitted to statistics analysis (EpiInfo®/Statcalc) with final Odds ratio calculation.



Sampling Timetable

	1 week	3 weeks	6 weeks	23 weeks
F- Strain Vaccinated Group	123	102	89	97
K-strain Vaccinated Group	117*	108**	94	92
Total	240	210	183	189

## \*Sample @ 1 week was before the vaccinatior

# Fig. 3. Results % Positive Birds (qPCR) – field strain / vaccine





Valiation

Flocks vaccinated with live Mg strain K5831 B-19 (K-Strain) at 5-7 days of age in compassion to previous

# **Discussion and conclusion**

Mycoplasma *gallisepticum* is highly disseminated in Nepal and Myanmar. This field study demonstrated that commercial layer chickens under high Mg challenge had less field Mg positiveness, better vaccine strain take and lower air sac lesions when early vaccinated with K-strain in comparison with late F-strain vaccination. The odd ratio calculation demonstrated that there is ≈ 5 times less chance to have Mg detection if used live Mg K-strain vaccine within 5-7 days of age when compared to F-strain at 3-4 weeks of age.



\*\*Sample @ 3 weeks was before the vaccination

flocks vaccinated with F-strain at  $\geq$  3 weeks old demonstrated less positiveness to field Mg at 3(31.4% vs 11.1%), 6(34.8% vs 13.8%) and 23(27.8% vs 6.5%) weeks-of-age. K-Strain showed better persistence than F-strain at 6 (47.2% vs 83%) and 23(25.8% vs 69.6%) weeks-of-age.







# References

- Ferguson-Noel, N.M., V.A. Laibinis, and S.H. Kleven. 2012. Evaluation of Mycoplasma gallisepticum K-strain as a live vaccine in chickens. Avian Dis. 56:44–50.
- Ferguson-Noel, N.M. and S.M. Williams. 2015. The efficacy of Mycoplasma gallisepticum K-strain live vaccine in broiler and layer chickens. Avian Pathol. 44:75–80.

Flocks vaccinated with live K-Strain had significantly lower air sac lesions at 6(12.8% vs 41.6%) and 23(22.8% vs 48.5%) weeks of age.