LETTER TO THE EDITOR

Does vaccination with the live mycoplasma vaccine MSH increase the pathogenicity of Avian influenza infections?

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In the 2017 paper "*Mycoplasma synoviae* vaccine modifies virus shedding and immune responses of avian influenza (H9N2) infection in commercial layers" (Umar et al., 2017) authors describe experiments in Pakistan where H9N2 infection parameters were modified by vaccination with the live *Mycoplasma synoviae* (**MS**) vaccine MSH. This outcome is conceivable and could possibly be a downside of live vaccination, but the results are presented as though they are a unique property of the vaccine without considering that field strains might also possess these properties (possibly with greater effect). Indeed, mycoplasma species and other respiratory tract microbiota considered to be commensals may also be able to facilitate viral protein proteolytic activation. Some of the experimentation described in this paper appears highly unlikely if the materials and methods are accurate descriptions of the experiments. For example, the use of Nobilis MG/MS RSA, freeze dried MSH, and ME broth are all unlikely if the experiments were conducted in 2016 or thereabouts. The paper claims that freeze dried MSH was used for vaccinating the hens. The vaccine was invented by me, Bioproperties is the only manufacturer and the product has never been produced commercially in a freeze-dried format. In fact, the vaccine has yet to be registered in Pakistan and has never been directly shipped from Bioproperties to Pakistan. Furthermore, the described methods for MSH enumeration is a clear compilation of the text of my 2009 paper (Feberwee et al., 2009). This report used the MSH vaccine as a frozen culture (from a commercial batch) and challenged with a freeze-dried culture. The titration of each culture was by different methods. The striking similarity between the Material and Methods text of the former work with that of Umar et al. (2017) brings the latter study into question. Current manuscript screening methods missed this high similarity. On balance, if the paper is correct, one would have to consider the potential disadvantage of higher viral shedding in a vaccinated flock challenged with H9N2 compared with the benefits of controlling MS effects throughout the life of the flock (disease, production efficiency, and less antibiotic dependence). The importance of the paper to the field situation is ambiguous because of the current high prevalence of MS in the field. Like all newspaper headlines that are posed as questions, my conclusion is this paper provides no clear evidence that MSH vaccination potentiates H9N2 AIV shedding in commercial layers because of the questions of the methodology.

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