SWINE CONJUNCTIVITIS DUE TO THE NOVEL SPECIES MYCOPLASMA SP.1654_15 IN ITALY

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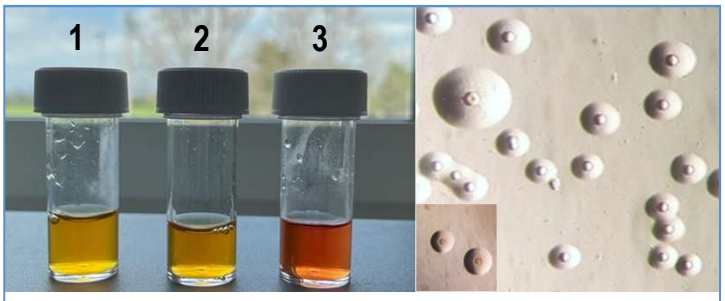
INTRODUCTION

- Conjunctivitis is a common condition in swine herds and manifests with oculonasal discharge and excessive lacrimation
- Among the environmental causes of conjunctivitis, irritating substances include dust, ammonia and hydrogen sulfite
- Conjunctivitis could also be a manifestation of systemic viral diseases (*e.g.* classical swine fever, African swine fever, pseudorabies, porcine circovirus disease, swine flu, porcine reproductive and respiratory syndrome) as well as of respiratory diseases
- The major infectious causes of conjunctivitis are *Chlamydia* spp. and ***Mycoplasma* (*M.*) *hyorhinis***
- A novel, highly specialized Mycoplasma species closely related to *M. hyorhinis* and tentatively named **Mycoplasma sp. 1654_15**, has recently been associated with episodes of swine conjunctivitis in Germany (Hennig-Pauka *et al*., 2020)
- This study investigated *M. hyorhinis* strains previously isolated in clinical conjunctivitis samples in Italy for the presence of this novel species

MATERIALS & METHODS

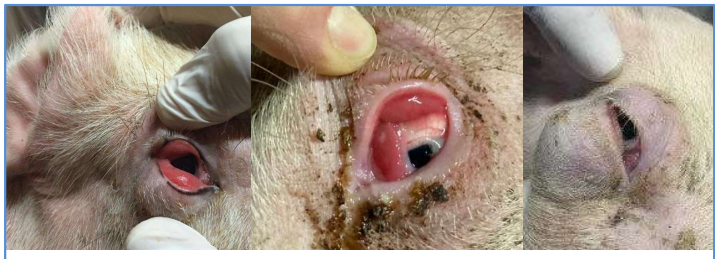
- *M. hyorhinis* strains were collected during episodes of clinical conjunctivitis occurred from 2015 to 2020 in swine herds in Italy
- These strains were obtained from conjunctival swabs submitted to **Mycoplasma culture procedure** (WOAH: Manual for Terrestrial Animals chapters 3.8.3 2018, 3.4.8 and 3.8.4 2021) and to *Mycoplasma* colonies identification by **rDNA V3 gene amplification and DGGE**
- Five of these *M. hyorhinis* strains collected in 4 swine herds were submitted to amplification and sequencing of **U1-U5 segments of operons rrnA and rrnB of 16S rRNA genes**
- *M. hyorhinis* strains were also analyzed by the **PCR** protocol of Hennig-Pauka *et al.* (2020)



PPLO culture: tubes 1 and 2 show a culture positive result for Mycoplasma spp.; tube 3 shows a culture negative result for Mycoplasma spp. (left)
PPLO agar photo of Mycoplasma spp. colonies (right)

RESULTS

- The conjunctivitis was bilateral and severe, with marked oedema, hyperemia and watery/mucous oculonasal discharge
- 16S rDNA product sequencing displayed **99.33% to 99.91% homology with Mycoplasma sp. 1654_15** (Hennig-Pauka *et al*., 2020)
- Species identification has been confirmed by PCR (Hennig-Pauka *et al*., 2020)



Previous episodes of conjunctivitis similar to those included in this study were characterized by marked conjunctival oedema and hyperemia with watery/mucous discharge (photo credit Dr. A. Broso)

CONCLUSIONS

- The results confirm the likely pathogenic role of Mycoplasma sp. 1654_15 as a causative agent of conjunctivitis in swine
- Similarly to what observed also in our strains, **Mycoplasma sp. 1654_15 appears strictly correlated to *M. hyorhinis***, as it is reported a sequencing homology ranging from 98.80 and 99.11%. These two species are considered closely related but distinct taxa in the genus *Mycoplasma*
- Given the capacity of a rapid adaptation to new ecologic niches and the parasitic behaviour of mycoplasmas, monitoring is crucial in order to prevent and limit their spread
- Being closely related to *M. hyorhinis*, in the case of a rapid diagnostic screening, a specific PCR method would be required to adequately distinguish these two Mycoplasma species

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