

Brief Communication

MYCOPLASMAS ISOLATED FROM NORWEGIAN PIG LUNGS

Porcine enzootic pneumonia (EP), a disease very common throughout the world, is regarded as a lung mycoplasmosis caused by *Mycoplasma suis*pneumoniae. The great economic importance of EP lies in the reduced weight gain and the reduction in food utilization, up to 20 % for pigs in infected herds (*Whittlestone* 1979). EP has only to a small extent been a subject of investigation in Norway. *M. suis*pneumoniae has been isolated twice from pig lungs (*Saxegaard* personal communication); apart from this no data exist concerning mycoplasmas in Norwegian pigs. The present report describes a preliminary investigation on the occurrence of *M. suis*pneumoniae in Norway, with a special emphasis on the herds being members of Norwegian Pig Breeders Association (NPBA) and designated "elite herds".

From one of NPBA testing stations receiving pigs from elite herds, 28 lungs from bacon pigs were collected at slaughter. Lobular or lobar consolidations in the antero-ventral parts of lung and histological changes typical of EP (*Jericho* 1977) were seen in 43 % of the lungs investigated. Microbiological examination was carried out on 7 normal and 8 pneumonic lungs. Included in the material were also lungs from pigs of 6 elite herds. Four of these were regarded as non-affected, and 30 lungs from bacon pigs at slaughter showed no pneumonic lesions. Two herds had a history of respiratory problems, and pneumonic lesions were detected in 5 pigs killed for necropsy at 7—10 weeks of age.

Primary isolations of mycoplasmas was carried out as described by *Friis* (1971, 1975). *M. suis*pneumoniae was recovered from 6 of 8 pneumonic lungs from the testing station and in 1 lung from each of the 2 herds having respiratory problems. *Mycoplasma flocculare* was found in 3 normal lungs, 1 from the testing station and 2 from healthy herds. *Mycoplasma hyorhinis* was found in 1 normal and 1 pneumonic lung from the testing station and from all 4 pneumonic lungs from 1 of the problem herds, once in combination with *M. suis*pneumoniae. The rest of normal lungs from the testing station and the 4 healthy herds were negative concerning mycoplasma findings.

The strain of *M. suis*pneumoniae, *M. flocculare* and *M. hyorhinis* showed colony appearance, cultural characteristics and bio-

chemical reactions typical of the mycoplasma species (Whittlestone 1979). The isolates were passed through 0.45 μm membrane filter and cloned once before identified. All strains were inhibited by species specific immune serum (against strain "J" (NCTC 10110), "Ms42" (NCTC 10143) and "GDL" (NCTC 10121), respectively, in growth inhibition test. Strains of *M. flocculare* and *M. suis* were not inhibited by *M. suis* antiserum and *M. flocculare* antiserum, respectively.

Recovery of *M. suis* was closely related to pneumonic lesions. As all the pigs examined from the testing station were kept in the same room following arriving at the station, transmission of infectious agents among them was likely to happen, and no conclusions can be drawn concerning the occurrence of *M. suis* in the different elite herds supplying the pigs. However, in earlier investigations, the same type of pneumonic changes was found in lungs of slaughtered pigs from the testing station, the prevalence ranging from 26 to 40 % over a period of three years (Grøndalen personal communication). As the pigs in the station are stabled in four separate rooms and the management is based on the "all out — all in" system, these results indicated that infected pigs are constantly brought into the station. The finding of *M. suis* in 1 pig from another department of the station examined at a later stage confirms this assumption. It therefore seems probable that *M. suis* to a certain extent is present in breeding stocks. Results from the examination of the 4 healthy herds might indicate that part of the elite herds are free from both EP and *M. suis*.

M. flocculare was recovered from 3 lungs having no macroscopic changes except narrow bands of atelectasis and histological changes like focal and moderate lymphoid hyperplasia around bronchies or focal fibrosis. This organism was originally isolated in Denmark (Friis 1972) and is later reported from Great Britain (Whittlestone 1979), Sweden (Bølske *et al.* 1980) and USA (Armstrong & Friis 1981). In experimental infection only minor pathogenicity was demonstrated (Friis 1974). *M. flocculare* seems to be most important in the differential diagnosis of *M. suis* as these mycoplasmas have many features

The diagnosis of 3 strains of *M. suis* and 1 strain of *M. flocculare* and *M. hyorhinis* was verified by Dr. N. F. Friis, the State Veterinary Serum Laboratory, Copenhagen, Denmark.

in common concerning morphology and cultural characteristics. The great difference in metabolic inhibition titer between the 3 strains of *M. flocculare* in this material might indicate some serologic variation. However, all strains were equally well inhibited in the growth inhibition test, zones ranging from 5 to 6.5 mm.

Bacteria were recovered only from lungs from the 2 herds showing obvious respiratory symptoms. *Pasteurella multocida* was present in both herds, other bacteria isolated were *Corynebacterium pyogenes* and *Bordetella bronchiseptica*. Clinical symptoms diminished or disappeared in these herds following reduction in animal density and other environmental improvements.

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