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Investigation into the occurrence of newly recognised agents of swine dysentery in Australian pig herds

T. La ^A, N. D. Phillips ^A and D. J. Hampson ^A

^A Murdoch University, Murdoch, WA 6150.

Swine dysentery (SD) is a severe mucohaemorrhagic colitis classically described as resulting from infection of the caecum and colon with the anaerobic intestinal spirochaete *Brachyspira hyodysenteriae*. Swine dysentery can severely depress feed conversion efficiency in the grower/finisher phases and represents an animal welfare issue. In addition, control of SD requires considerable antimicrobial use.

Historically, *B. hyodysenteriae* has been believed to be the sole causative agent of SD, however outbreaks of bloody diarrhoea indistinguishable from SD have been documented since 2007 in grower-finisher pigs in Canada and the USA in farms where *B. hyodysenteriae* could not be identified. Investigation of these cases led to the recognition of novel, strongly β -haemolytic *Brachyspira* isolates, for which the name '*Brachyspira hampsonii*' has been proposed (Chandler *et al.* 2012). Experimental inoculations of pigs have established the pathogenic potential of this new species (Rubin *et al.* 2013a). In addition to North America, cases of SD caused by *B. hampsonii* have been recorded in pigs in Europe in 2013 (Mahu *et al.* 2014), and the species has been isolated from migratory waterbirds in Canada and in Spain. The latter species are thought to be reservoirs of the pathogen (Martínez-Lobo *et al.* 2013; Rubin *et al.* 2013a, 2013b). A distinct agent called '*Brachyspira suanatina*' that causes a swine dysentery-like disease also has been described in feral waterbirds and pigs in Scandinavia (Råsbäck *et al.* 2007).

In Australia, cases of colitis associated with 'atypical' strongly β -haemolytic *Brachyspira* strains also have been observed, although these have not been further investigated. Although Australian pig veterinarians are well aware of the importance of '*B. hampsonii*' and related species, their prevalence

amongst and within Australian herds is still not known. The lack of availability of diagnostic tools capable of identifying '*B. hampsonii*' is undoubtedly a contributing factor to this lack of data.

The aim of this study was to determine to what extent novel pathogenic *Brachyspira* species, including the recently described '*B. hampsonii*', are present in Australian pig herds. Diagnostic polymerase chain reactions for the direct identification of '*B. hampsonii*' and '*B. suanatina*' were developed and applied to samples collected from pigs with signs consistent with SD, or where the SD status was uncertain.

To date, 372 faecal samples and 239 colon samples have been received and tested. A total of 83 isolates (13.6%) of *B. hyodysenteriae* have been recovered from these samples. In addition, 64 isolates (10.5%) of *Brachyspira pilosicoli* (the agent of porcine intestinal spirochaetosis) and 56 isolates (9.2%) of *Brachyspira intermedia* (a species of uncertain pathogenicity) have also been identified. However, no isolates of '*B. hampsonii*' or '*B. suanatina*' have been recovered. The results suggest that if isolates of the new pathogenic *Brachyspira* species are present this would likely be at a low prevalence, and hence they should not be a major issue for the Australian industry at the present time. Nevertheless, further surveillance is justified.

References

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