



Current status of Swine Dysentery in the EU

“Take home” messages

- In EU countries, the use of all prescription-free antibiotic growth promoters, e.g. salinomycin, will be disallowed from January 1st 2006.
- Sweden banned all growth promoters in 1986.
- One of the most important consequences of the ban appears to be that Swine Dysentery (SD) remains as a significant disease in EU countries, as shown by recent reports from Sweden, Italy, Germany and UK.
- In Denmark, where in-feed antibiotic growth promoters were banned in 1999, the consequences in weaners have been (Taylor-Pickard, 2005):
 - significant decrease in growth rate;
 - increase in post-weaning mortality;
 - increase in age at which pigs reach 30kg bwt;
 - increase in post-weaning diarrhoea, particularly ileitis;
 - piglets more sensitive to stress;
 - batches had more uneven body weights when moved to grow-finish facilities.
- The use of antibiotics under veterinary prescription, based on the results of routine sensitivity tests and at registered dose levels and application periods, remains the best way of combating this increased prevalence of SD.

Reports on sensitivity testing from different EU countries indicate the pronounced efficacy of Tiamutin[®] against Brachyspira species and Tiamutin[®] is considered the product of choice against Swine Dysentery.

tiamutin[®]
the original you can trust

DEVELOPED EXCLUSIVELY FOR ANIMAL HEALTH • NOT USED IN HUMAN MEDICINE



Current status of Swine Dysentery in the EU

1) Sweden

In Sweden a ban on in-feed antibacterial growth promoters was introduced in 1986. In the initial years after the ban post-weaning diarrhoea associated with *E. coli* rapidly developed as a major problem. However in later years this problem was overcome by the introduction of "all-in, all-out" systems and by adding zinc oxide at 2000-3000 ppm to the feed for 2 weeks immediately post-weaning.

However the incidence of Swine Dysentery has increased and is today considered to be a significant clinical problem in Sweden. (Fellström, C., 2004).

An analysis of all *Brachyspira* samples submitted in Sweden in 1996-2003 from herds with diarrhoea showed that (given the assumption that sampling occasions = number of tested herds) an average 12% of all Swedish pig herds were sampled for *Brachyspira* spp during 2003.

Of these herds 33% tested positive for *B. hyodysenteriae*. Due to a decrease in the number of herds the figures correspond to a 3-fold increase in infection rate for *B. hyo* of 1.3% of all Swedish pig herds in 1996 to 4.1% in 2003. (Råsbäck et al., unpublished, cited by Fellström, C., 2004)

All *B. hyo* strains in Sweden are tested for their sensitivity to antibiotics. So far none have been proven to be resistant to tiamulin and the drug of choice for the treatment of Swine Dysentery in Sweden is tiamulin. (Fellström, C. 2004).



2) Italy

Meriardi et al., 2005 reported on the epidemiology of *Brachyspira* infections and other enteric disorders in pigs. During the period 2001-2004 *B. hyodysenteriae* increased in prevalence and in 2004 was the most common microbial cause of colitis in clinical cases from herds located in N. Italy. (See Table 1 below)

Table1: Prevalence of different pathogens in field cases of clinical colitis in growing and fattening pigs between 2001-2004 (Meriardi, G. et al., Italy)

Micro organism	2001 (n=82)		2002 (n=104)		2003 (n=107)		2004 (n=112)	
	n	%	n	%	n	%	n	%
<i>B. hyodysenteriae</i>	13	15.8	30	28.8	35	32.7	45	40.4
<i>B. pilosicoli</i>	7	8.5	4	3.9	6	5.6	8	7.1
<i>L. intracellularis</i>	32	39	34	32.7	39	36.2	32	28.6
<i>S. typhimurium</i>	22*	26.8*	18	17.3	22	20.5	20	17.9
<i>E. coli</i> (IC88)	6	7.3	4	3.9	5	4.7	7	6.3
<i>Y. enterocolitica</i>	0		2	1.9	3	2.8	3	2.7

**Salmonella* spp.

The data above originated from routine diagnostic activity and not from a formal surveillance programme and thus their statistical and epidemiological significance could be questioned. Nevertheless the incidence of Swine Dysentery has increased and the disease is apparently widely distributed in N. Italian pig herds now.

Factors involved in this include:

- Particular Italian production system (slaughter weight 160-180kg) leads to 3-4 additional months in production cycle;
- banning of in feed growth promoters with good activity against swine dysentery e.g. Carbadox;
- limited application of management measures modifying feed and improving biosecurity systems to help contain the disease;
- high level of polysaccharides of low digestibility in the diet.

3) Germany

Rothkamp, A. et al., from the School of Veterinary Medicine, Hannover, Germany, 2005) reported on the results of diagnostic testing for *Brachyspira* species in 2002-2004.

The samples were taken from pigs from N. Germany at all stages of production. The samples were inoculated onto selective media on the basis of TSA – agar supplemented with 0.1% yeast extract, bovine blood, vancomycin, colistin, rifampicin, spiramycin and spectinomycin for the isolation of *Brachyspira* species. *Brachyspira* spp were typed biochemically (haemolysis, indole and α galactosidase α and β glucosidase and hippurate) or by modified PCR.

From all the specimens (n=2782) included in the study, 1,740 (62.5%) were positive for *Brachyspira* spp. Overall 577 (33.7%) were identified as *B. hyodysenteriae*, whilst only 57 (3.3%) were identified as *B. pilosicoli*. (see Table 2 below)

Table 2: *B. species* isolated during 2002-2004 in routine diagnostic investigations

Year	<i>B. hyodysenteriae</i>		<i>B. pilosicoli</i>		<i>B. innocens</i>		<i>B. murdochii</i>		<i>B. intermedia</i>		<i>B. species</i>	
	n	%	n	%	n	%	n	%	n	%	n	%
2002	167	37	12	2,7	147	32,6	88	19,5	33	7,3	4	0,9
2003	183	34	22	4	194	36	99	18,4	38	7	2	0,4
2004	227	30	23	3	281	37	155	20	64	8	1	0,1
Total (mean %)	577	33,7	57	3,3	622	35,2	342	19,3	135	7,4	7	0,5

Thus in N. Germany *B. hyodysenteriae* is widely distributed in pig herds whereas *B. pilosicoli* is uncommon.

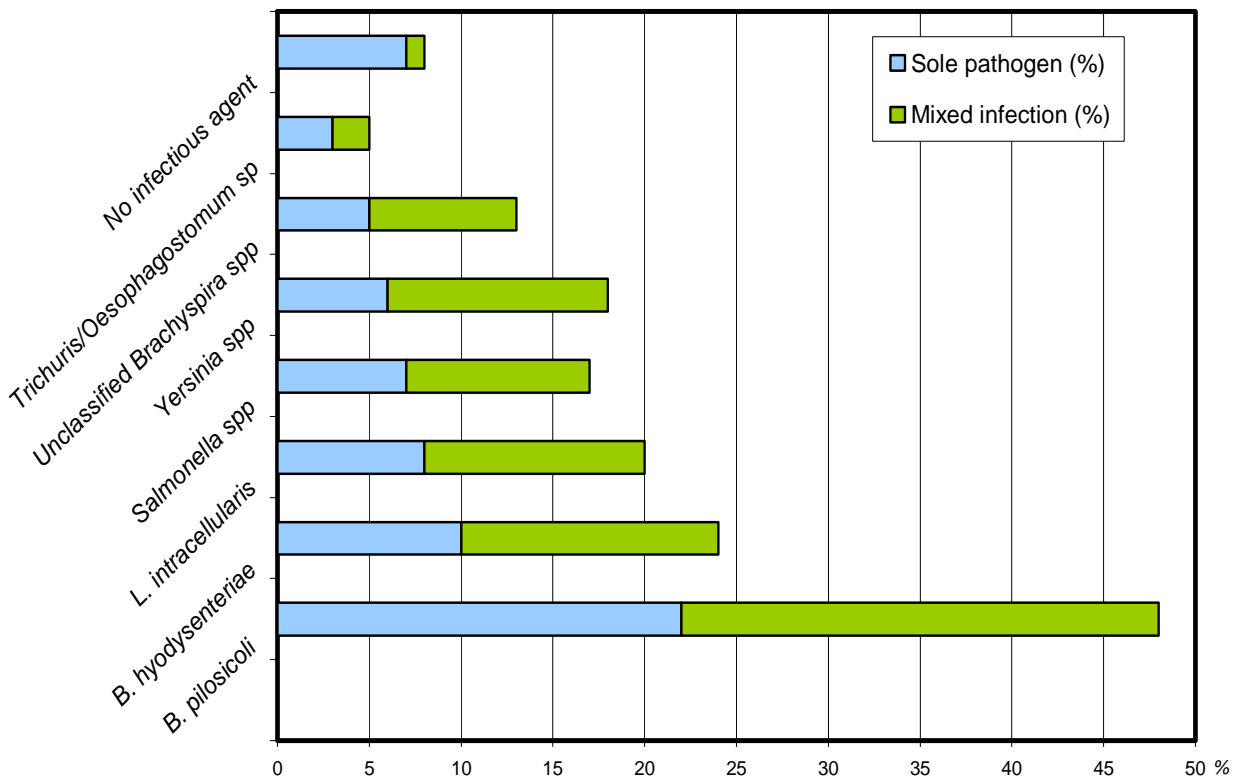


4) UK

Dr. Jill Thomson (2004) has reported on the prevalence in Scotland of various pathogens implicated in 105 outbreaks of colitis investigated in pigs during 1998-2000.

B. pilosicoli was the most common pathogen, either as the sole pathogen or as a component of a mixed infection. *B. hyodysenteriae*, however, was the second most common agent as both sole pathogen and in mixed infections. (See Table 3 below)

Table 3: Pathogens implicated in 105 outbreaks of colitis



Conclusions

The increasing importance and increased incidence of *Brachyspira hyodysenteriae* infections in Europe in the last decade is not surprising given the decreased use of growth promoters. Swine Dysentery is considered as a significant clinical problem.


The prudent use of antibiotics should be based on strict indications and follow proper field and laboratory diagnosis (results of sensitivity tests; correct treatment levels and application period; sensitivity testing). This will help to ensure efficacy in the treatment of Swine Dysentery over the longer-term. In-vitro tests conducted in the EU continue to show the pronounced efficacy of tiamulin and that any decreased susceptibility to tiamulin by *B. hyo* develops only slowly, both in-vivo and in-vitro (Karlsson, M. et al., 2001).

- One of the most important consequences of the ban appears to be that Swine Dysentery remains as a significant disease in EU countries.
- Epidemiological data from Sweden, Italy, Germany and UK are all showing an increase in the incidence of Swine Dysentery in the last decade.
- Swine Dysentery is considered as a significant clinical problem in those countries.
- Use of antibiotics under veterinary prescription should be based on results of routine sensitivity tests and at correct treatment (registered) dose levels and application periods.

Reports on sensitivity testing from different EU countries – indicate the pronounced efficacy of Tiamutin® (tiamulin) against *Brachyspira* species and Tiamutin® the 'product of choice' against Swine Dysentery.



Dr Ulrich Klein
International Technical Services
Manager, Pig Products



Dr David Miller
Demafarma Consultancy Ltd

Further information on the Tiamutin® (tiamulin) range of products is available from the Pig Products Manager at Novartis Animal Health operations in over 50 countries worldwide.

References

1. Duhamel, G.E. (2004): In-vitro and in-vivo efficacy of antimicrobial agents for control of Porcine Colonic Spirochaetosis (PCS). Proc. 1st Novartis Animal Health European Ileitis/Colitis Workshop, Alpbach, Austria. p. 57-62.
2. Fellström, C. (2004): Clinical significance diagnosis and control of *Brachyspira spp* and *Lawsonia intracellularis* in Sweden. Proc. 1st Novartis Animal Health European Swine Ileitis/Colitis Workshop, Alpbach, Austria. p. 64-68.
3. Karlsson, M. et al. (2001): Susceptibility to pleuromutilins in *Brachyspira (Serpulina) hyodysenteriae*. *Animal Health Research Reviews*. 2(1), p.59-65.
4. Meriardi, G. et al. (2005): *Brachyspira* infections and enteric disorders in the pig: epidemiological update in Italy. Proc. 3rd International Conference on Colonic Spirochaetal Infections in Animals and Humans, Star Hotel du Parc, Parma, Italy. p. 34-35.
5. Råsbäck, T. et al. (2004): Isolation of *Brachyspira spp.* in Swedish pig herds with diarrhoea 1996-2003. Proc. 18th IPVS Congress, Hamburg, Germany. Vol 1, p.286.
6. Rothkamp, A. et al. (2005): *Brachyspira spp.* isolates from pig herds in N. Germany in 2002-2004. Proc. 3rd International Conference on Colonic Spirochaetal Infections in Animals and Humans, Star Hotel du Parc, Parma, Italy. p. 28-29.
7. Taylor-Pickard, J.A. (2005): Are growth promoters essential? *Pig Progress* Vol. 21, 4 p. 6-8.
8. Thomson, J. (2004): Control of Porcine Colonic Spirochaetosis (PCS). Proc. 1st Novartis Animal Health European Swine Ileitis/Colitis Workshop, Alpbach, Austria. p. 49-54.