



## Québec

### Distribution of *Streptococcus suis* capsular types in 1998

From January to December 1998, 332 streptococcal isolates identified as *Streptococcus suis* from diseased pigs were received at our laboratory for serotyping. Of these, 321 isolates were from veterinary diagnostic laboratories in Quebec, and 11 were from other Canadian provinces and the United States. Serotyping was carried out by using the coagglutination test. The capsular types for the 332 isolates are given in Table 1.

In 1998, capsular type 2 had a prevalence of 22%, which was 4% higher than in 1997 (1). The other frequent serotypes were, in decreasing order, capsular types 1/2, 3, 1, 7, 8, 4, and 9. Capsular type 1 has

**Table 1. Numerical distribution of capsular types of *Streptococcus suis* in 332 isolates recovered from diseased pigs in 1998**

Capsular type	Number of isolates	%	Capsular type	Number of isolates	%
1	20	6	18	0	0
2	74	22	19	1	< 1
1/2	44	13	20	0	0
3	41	12	21	1	< 1
4	9	3	22	3	1
5	6	2	23	4	1
6	1	< 1	24	0	0
7	20	6	25	3	< 1
8	20	6	26	0	0
9	9	3	27	4	1
10	0	0	28	1	< 1
11	1	< 1	29	1	< 1
12	0	0	30	4	1
13	0	0	31	6	2
14	1	< 1	32	2	< 1
15	0	0	33	0	0
16	1	< 1	34	7	2
17	0	0	NT	48	14

NT = Untypeable isolates

**Table 2. Distribution in percentages of the 6 most prevalent *Streptococcus suis* capsular types between 1991 and 1998**

Capsular type	1991	1992	1993	1994	1995	1996	1997	1998
2	21	23	19	24	18	18	18	22
1/2	12	13	8	9	14	8	11	13
3	12	13	10	10	12	14	11	12
4	4	5	3	5	8	5	5	3
7	7	7	7	6	8	10	7	6
8	6	7	8	7	7	6	7	6

shown a considerable increase in prevalence in 1998 (6%) when compared with 1997 (3%), while capsular types 10, 12, 13, 15, 17, 18, 20, 24, 26, and 33 were not detected.

Table 2 compares the distribution of the 6 most prevalent *S. suis* capsular types detected between 1990 and 1998. As reported in past years, about 60% of isolates belonged to capsular types 2, 1/2, 3, 4, 7, and 8. If untypeable isolates are not taken into consideration, the percentage exceeds 70%. These results support a proposal for diagnostic laboratories to perform serotyping by using a limited number of antisera and to refer the untypeable isolates to a reference laboratory. The number of untypeable isolates is always a concern, but some of them are either not capsulated or show autoagglutination on arrival at our laboratory.

### References

- Higgins R, Gottschalk M. Distribution of *Streptococcus suis* capsular types in 1997. *Can Vet J* 1998; 39: 300.

*Robert Higgins, Marcelo Gottschalk, Groupe de recherche sur les maladies infectieuses porcines et Département de pathologie et microbiologie, Faculté de médecine vétérinaire, Université de Montréal, C.P. 5000, Saint-Hyacinthe (Québec) J2S 7C6.*



## Manitoba

### Evidence for circovirus in cattle with respiratory disease and from aborted bovine fetuses

Porcine circovirus (PCV) has been associated with lesions in young pigs with postweaning multisystemic wasting syndrome (1-3). Typical clinical signs include progressive weight loss, respiratory signs and occasionally diarrhea, consistently associated with interstitial pneumonia and lymphadenopathy (2). In our laboratory, porcine circovirus infection is diagnosed by

histopathology and the polymerase chain reaction (PCR) test.

The presence of antibodies reacting with porcine circovirus in cattle sera has been reported previously (4). In the present study, we tested lung tissue from cattle with pneumonia and lung and thymus tissue from aborted bovine fetuses for the presence of circovirus by using PCR. Lung tissue samples from 6 of 100 cases of bovine respiratory disease and from 4 of 30 aborted fetuses were positive for circovirus (Table 1). Of the 6 cases of respiratory disease that were circovirus PCR-positive,

**Table 1. Summary of 10 bovine cases testing positive for circovirus with the polymerase chain reaction**

Case	Pathology	Circo	IBRV	BVDV	BRSV	Bacteria/other agents
Resp. 1	Fibrinous pneumonia with necrotizing vasculitis	+	-	-	-	Hemophilus somnus
2	Exudative debris in small bronchioles, muscle degeneration, mineralization	+	-	+	-	-
3	Interstitial pneumonia with type 2 pneumocyte hyperplasia	+	-	-	-	-
4	Fibrinous pneumonia	+	-	-	-	Pasteurella hemolytica
5	Interstitial pneumonia and bronchiolitis with many syncytial cells	+	-	-	+	-
6	Fibrinous pneumonia with type 2 pneumocyte hyperplasia	+	-	-	+	H. somnus, P. hemolytica
Abo. 1	Congenital anomalies — no other lesions	+	-	-	ND	-
2	Perivascular inflammatory lesions in the lung and epicarditis	+	-	-	ND	-
3	No lesions	+	-	+	ND	-
4	No lesions	+	-	-	ND	-

Resp — Respiratory cases  
Abo — Abortions  
ND — Not Done  
Circo — Circovirus

IBRV — infectious bovine rhinotracheitis virus  
BVDV — bovine viral diarrhea virus  
BRSV — bovine respiratory syncytial virus

2 were also PCR-positive for bovine respiratory syncytial virus (BRSV), and 1 was PCR-positive for bovine viral diarrhea virus (BVDV). One circovirus-positive respiratory disease case was a bison calf. Of the 4 circovirus PCR-positive fetuses, 1 was also PCR-positive for BVDV. Tissues from all 10 cases that were PCR-positive for circovirus were PCR-negative for infectious bovine rhinotracheitis virus (IBRV).

Immunohistochemical testing was done on lung from 1 respiratory disease case that was PCR-positive for circovirus. Antisera used in the test were a polyclonal antiserum and a monoclonal antiserum raised against circoviruses isolated from pigs with wasting syndrome and designated (5) as PCV-type 2. Tissue from the bovine respiratory disease case stained positive for porcine circovirus when PCV-type 2 polyclonal antiserum was used, but did not stain when PCV-type 2 monoclonal antiserum was used.

The PCR amplification products from these circovirus-positive bovine cases are similar to those from PCV-type 2-positive porcine cases. We are tentatively naming this agent bovine circovirus (BCV). The complete DNA sequence of BCV has been determined (Hamel, Nayar, personal observation) and deposited in the GenBank nucleotide sequence database (accession number AF 109397). The BCV genome is nearly identical to that of PCV-type 2 isolated from pigs, with 99% overall nucleotide sequence homology.

**To the best of our knowledge, this is the first report of a circovirus PCR product in lung tissue from cattle with respiratory disease or lung tissue from aborted bovine fetuses. Recent epidemics of circovirus-related clinical syndromes in pigs in North America and Europe support the need for more research on the potential role of BCV in cattle diseases.**

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### References

1. Allan GM, McNeilly F, Kennedy S, et al. Isolation of porcine circovirus-like viruses from pigs with a wasting disease in the USA and Europe. *J Vet Diag Invest* 1998; 10: 3–10.

2. Ellis J, Hassard L, Clark E, et al. Isolation of circovirus from lesions of pigs with postweaning multisystemic wasting syndrome. *Can Vet J* 1998; 39: 44–51.  
3. Nayar GPS, Hamel A, Lin L. Detection and characterization of porcine circovirus associated with postweaning multisystemic wasting syndrome in pigs. *Can Vet J* 1998; 38: 385–386.  
4. Tischer I, Bode J, Timm H, et al. Presence of antibodies reacting with porcine circovirus in sera of humans, mice and cattle. *Arch Virol* 1995; 140: 1427–1439.  
5. Meehan BM, McNeilly F, Todd D, et al. Characterization of novel circovirus DNAs associated with wasting syndrome in pigs. *J Gen Virol* 1998; 79: 2171–2179.

*Gopi P.S. Nayar, André L. Hamel, Lihua Lin, Cheryl Sachvie, Elsie Grudeski and Grant Spearman, Veterinary Services Branch, Manitoba Agriculture, 545 University Crescent, Winnipeg, Manitoba R3T 5S6.*



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