

Prevalence of Rotaviruses in Québec Dairy Calves and Evaluation of Diagnostic Tests

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Rotavirus is an important cause of diarrhea in newborn cattle. The rotaviruses involved are typically of group A, and cause diarrhea in calves 4 to 14 days old. The isolation of rotaviruses has been reported in 44% of diarrheic calves and in 14% of healthy calves. The prevalence of rotavirus excretion has not been estimated in Québec dairy calves. The objectives of this study were 1) to estimate prevalence of rotaviruses in feces of neonatal dairy calves, and 2) to compare 3 tests for detection of rotaviruses in fecal samples.

A random sample of 12 veterinarians was drawn from the dairy practitioners of the province of Québec. For each veterinarian, 3 herds were randomly selected from their clients, and the 3 youngest calves (between 3 days and 1 month of age) on these farms were sampled. For each calf sampled, age and presence of diarrhea were recorded. Test A, an ELISA that specifically detects group A rotaviruses with a sensitivity $\geq 98.7\%$ and a specificity of 99.2% was used to determine individual and herd prevalences. A subsequent sampling of diarrheic calves was used to insure a minimum of 30 true positives for sensitivity estimates of other tests. Samples positive and negative on test A, used as gold standard, were tested with another ELISA (test B) and a rapid dip stick test (test C).

Overall, 11 veterinarians participated, for a total of 32 farms and 95 calves sampled randomly. Estimated

calf prevalence was 7.4% (95% C.I. 3.3-15.1%) and estimated herd prevalence was 12.5% (95% C.I. 4.1-29.9%). Thirty-six additional samples were collected. Thirty two positive samples and thirty one negative samples were tested with all 3 tests.

		Test A				Test A	
		+	-			+	-
Test B	+	28	2	Test C	+	28	1
	-	4	29		-	4	30

Se : 87.5% (95% C.I. 70.1-95.9%)

Sp : 93.5% (95% C.I. 77.2-98.9%)

Kappa : 0.81

Se : 87.5% (95% C.I. 70.1-95.9%)

Sp : 96.8% (95% C.I. 81.5-99.8%)

Kappa : 0.84

No association was identified between rotavirus fecal excretion and age ($p=0.40$) or presence of diarrhea ($p=0.75$). However, the low number of calves excreting rotaviruses in the random sample ($n=7$), did not provide an adequate power to find a significant association had there been one.

In conclusion, low individual and herd prevalences were identified in Québec dairy calves. Both ELISAs and the rapid test examined provided similar results with appropriate sensitivities and specificities.