

Identifying Fetal Bovine Viral Diarrhea Virus Infection from Amniotic and Allantoic Fluid

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Introduction

Control of Bovine Viral Diarrhea Virus (BVDV) relies on accurate identification of persistently infected (PI) animals. A persistent infection can develop when a fetus is exposed to virus *in utero*, prior to 125 days gestation. While effective tests exist to identify PI calves and cattle, none of them determine the BVDV status of a pregnant cow's fetus. Thus, a pregnant, non-infected cow may still introduce BVDV to a herd by delivering a PI calf. This study evaluated different virological tests on amniotic and allantoic fluid from bovine fetuses for detection of BVDV.

Materials and Methods

Amniotic fluid (AMF), allantoic fluid (ALF), and fetuses were collected from seven crossbred beef cows at 95-102 days of gestation via Caesarean section. Whole blood was collected from each cow at the time of surgery. Cows were inoculated with BVDV at 22 days prior

to sample collection. Virus isolation (VI), microtiter virus isolation (MT VI), and antigen-capture enzyme-linked immunosorbent assay (AC ELISA) for BVDV were performed on AMF and ALF. VI was also performed on fetal tissues and on blood from the dams. Bacterial culture was performed on one macerated fetus and associated fetal fluids.

Results and Conclusions

On the day of sample collection, none of the dams were viremic. Therefore, maternal blood contamination did not affect other test results. Since a pure allantoic fluid sample could not be obtained from cow #3, this sample was omitted from tests. All other samples were collected uneventfully. Test results are shown in Table 1.

These preliminary data indicate that VI or MT VI for BVDV on fetal fluids from a viable pregnancy may accurately predict fetal BVDV status. AC ELISA had a higher risk of false negatives in this small study. Additional study is required for statistical analysis.

Table 1. Results of different virological tests for detection of BVDV.

Sample Type:	Fetus	Amniotic Fluid			Allantoic Fluid		
		VI	MTVI	AC ELISA	VI	MTVI	AC ELISA
Cow #							
1	+	+	+	-	+	-	+
2	+	+	+	+	+	+	-
3	+	+	+	+	Not Available		
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7*	-	-	-	+	+	-	+

* Non-viable macerated fetus