

BVD Type 1b

Key Points

EXPRESS® 5 Vaccinated Calves Exhibit Excellent Serum Titers and Protection Against BVD Type 1b in Two Studies.

Challenge and serological studies run with **EXPRESS 5** vaccine containing Singer strain Type 1a virus and Type 2 Strain 296, show excellent results in titers and in direct challenge against BVD Type 1b.

Serological Study Design

Study animals	98 cross bred beef calves randomly assigned to two vaccine groups
Location	Commercial cow/calf herd in Arkansas
Group 1	EXPRESS® 5 with BVD strain Type 1a virus
Group 2	Bovi-Shield® 4 with BVD Type 1a NADL strain
Serum sample collection	At weaning 80 days post weaning

Serum Titer Study Results

	At Vaccination (Weaning)		80 Days Post Vaccination	
	BVD Type 1a	BVD Type 1b	BVD Type 1a	BVD Type 1b
Express 5	0.8	1.1	1499	309
Bovi-Shield 4	1.8	1.3	129	26

Singer strain used as reference strain in testing for BVD Type 1a and TGAC BVD strain used as reference strain in testing for BVD Type 1b

Challenge Study Design

Study animals	25 crossbred beef calves all sero-negative for BVD at <1:2 titer
Location	Cosby, MO
Groups	20 calves vaccinated with Express 5 5 calves were non-vaccinated controls
Challenge	30 days post vaccination all calves challenged with New York 1 BVD Strain (Type 1b)
Data collection	Rectal temperatures, clinical scores, white blood cell counts

Results

Statistically significant differences between vaccinates and controls were observed in:

Clinical scores on day 8 post-challenge.

Total clinical scores for the complete post-challenge period.

Rectal temperatures on days 7 and 8 post-challenge.

White blood cell counts on days 3, 4, 5, 6 & 7 post-challenge.

In addition five of five control animals had viremia that persisted up to 8 days while only 3 of 20 vaccinates showed viremia for a single day.

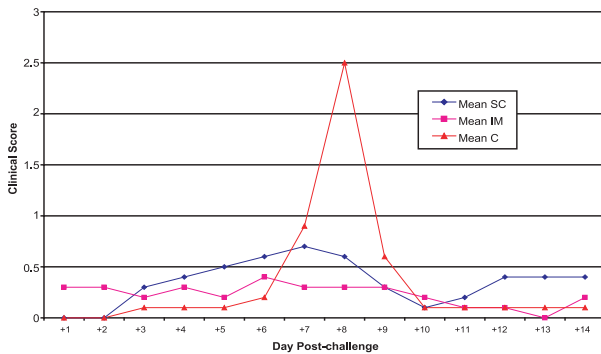
Serology Results

Heterologous SN Titer Results Before and After Type 1b BVD Challenge

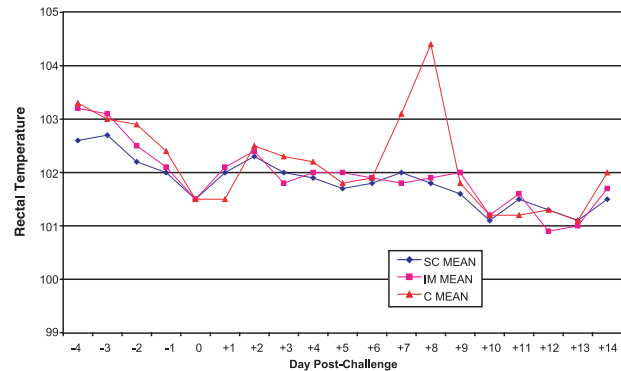
	Vaccination		Challenge		
	Day 0	Day 28	Day 30	Day 44	Day 51
Vaccinates GMT* N=20	<2	1538	No test	3548	3135
Controls GMT N=5	<2	<2	No test	458	591

*GMT=Geometric Mean Titer reported as reciprocal of the 50% endpoint dilution.

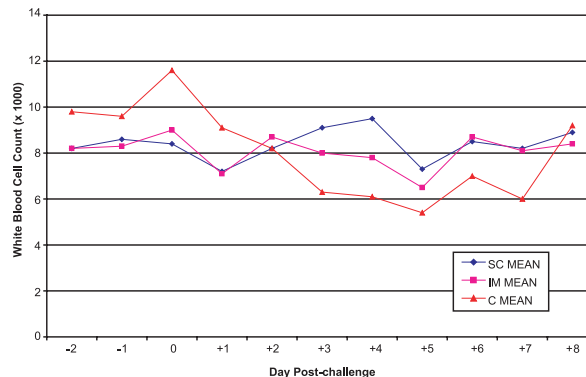
Mean Post-challenge Clinical Scores from the New York 1 Challenge Study



Mean Rectal Temperatures from the New York 1 Challenge Study



Mean White Blood Cell Counts from the New York 1 Challenge Study



The Bottom Line

- **EXPRESS 5** vaccine containing BVD Singer Strain Type 1a shows significant protection against direct challenge with Type 1b strain.
- **EXPRESS 5** Vaccine containing BVD Singer Strain Type 1a stimulated nearly 12 times greater serological titer to Type 1b than Bovi-Shield® 4.