

BVD Vaccination and Challenge Trials for BVD Types 1 and 2 Vaccines

Proving efficacy of BVD Type 1 Singer and Type 2 Strain 296 bivalent modified live virus vaccine in a host animal against challenge with heterologous strains of BVD was the objective of these studies.

Experimental Design

Study 1. Twenty crossbred beef calves were vaccinated once with the bivalent BVD MLV vaccine. Ten head were vaccinated Sub-Q; ten head were vaccinated IM. Five head were unvaccinated.

All calves were seronegative for BVD at < 1:2 SN titer.

On Day 30 post-vaccination, all calves were challenged intranasally with a Type 1 BVD New York 1 strain obtained from the Center of Veterinary Biologics.

Study 2. This study varied from Study 1 only in day of challenge and strain of BVD. In this study calves were challenged on Day 28 post-vaccination with a Type 2 BVD 890 strain obtained from the Center of Veterinary Biologics.

Conclusion

The results prove efficacy of the BVD Type 1 Singer and Type 2 Strain 296 combination MLV vaccine against heterologous challenge strains.

Serology Results

Heterologous SN Titer Results before and after Type 1 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.

Heterologous SN Titer Results before and after Type 2 BVD Challenge

	Vaccination	Challenge		
	Day 0	Day 28	Day 42	Day 49
Vaccinates GMT N=20	<2	64	117	142
Controls GMT N=5	<2	<2	38	135

Other Results

For each of the two challenge trials, clinical scores were recorded and the following charts plotted.

Chart 1. BVD Type 1 Clinical Scores

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

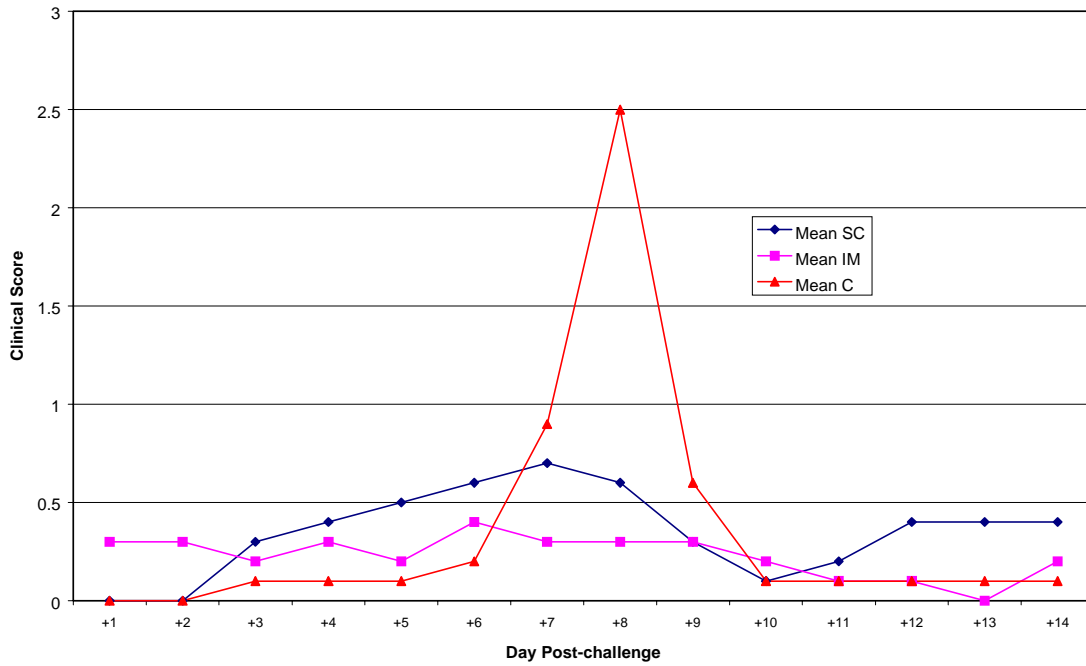
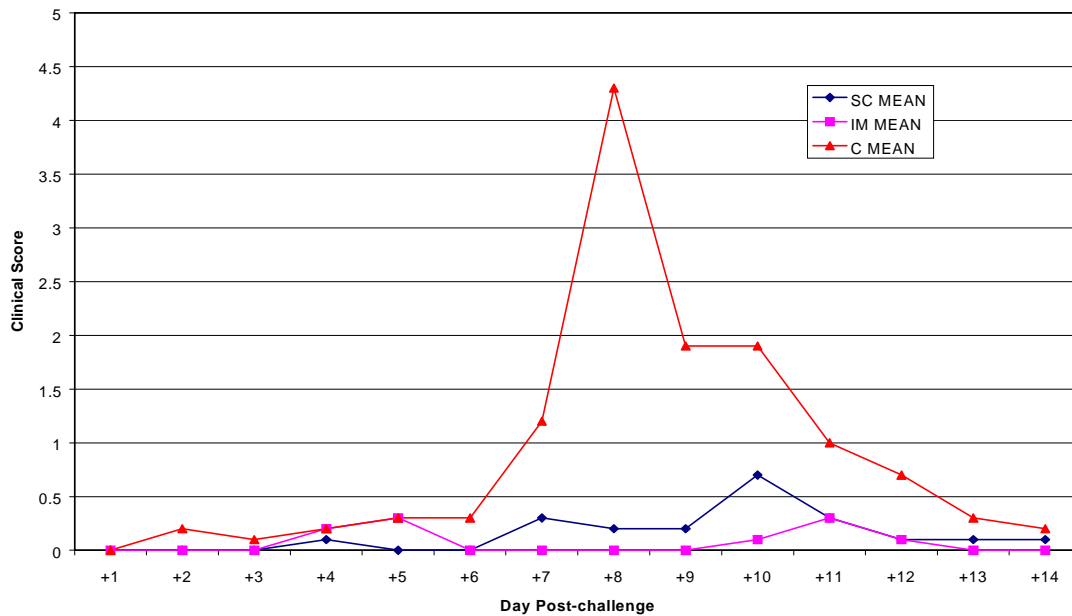


Chart 2. BVD Type 2 Clinical Scores

Mean Clinical Scores from the 890 Challenge Study



Body rectal temperatures were recorded and plotted on the following charts.

Chart 3. BVD Type 1 Mean Rectal Temperatures

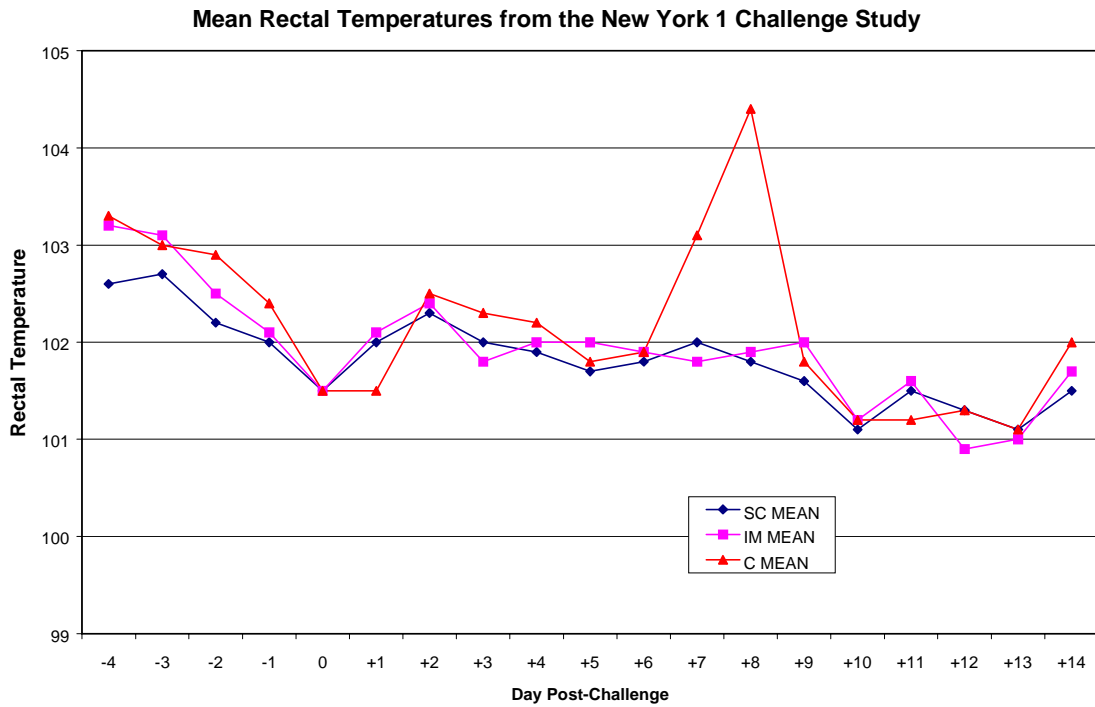
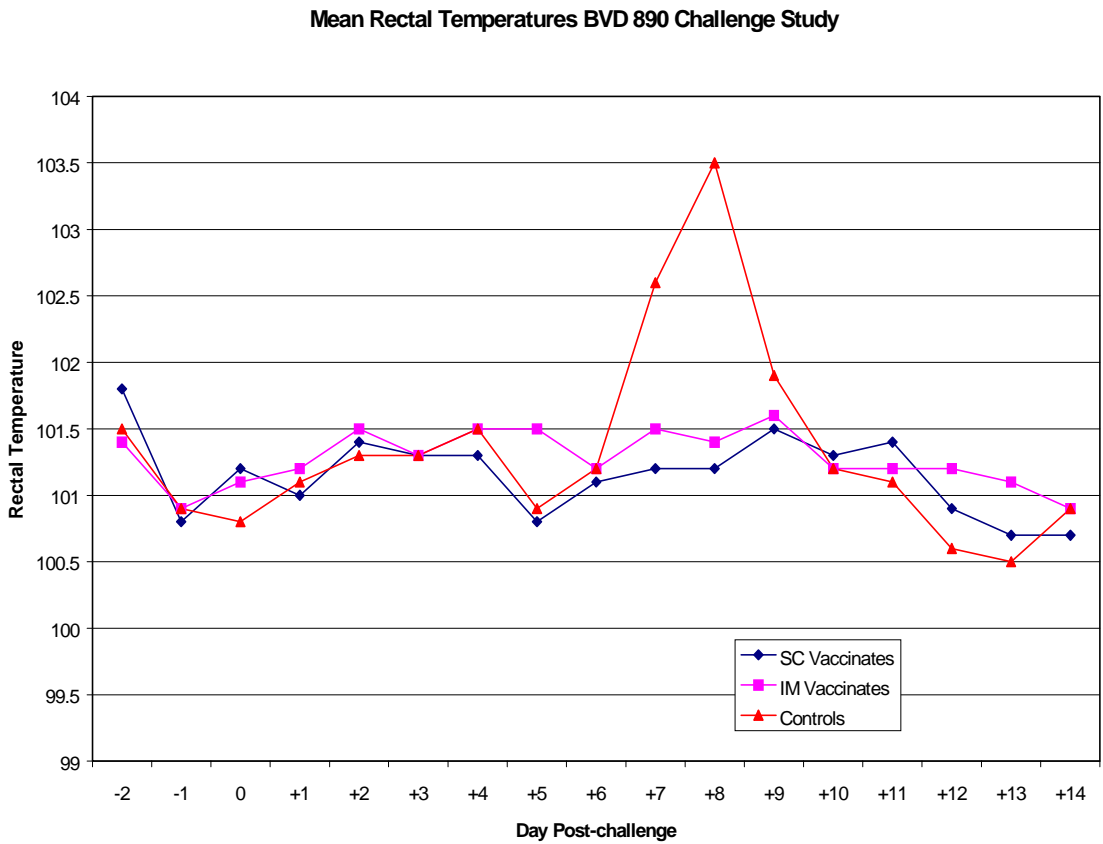


Chart 4. BVD Type 2 Mean Rectal Temperatures



Mean white blood cell counts were recorded and plotted on the following charts.

Chart 5. BVD Type 1 White Blood Cell Counts

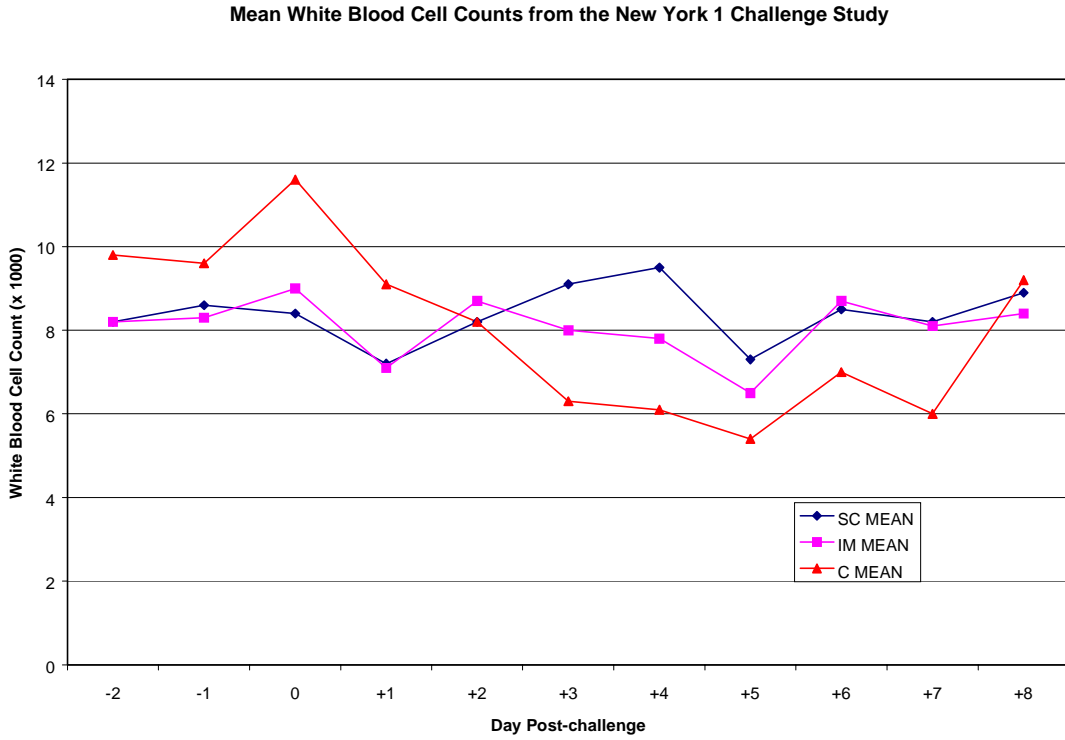
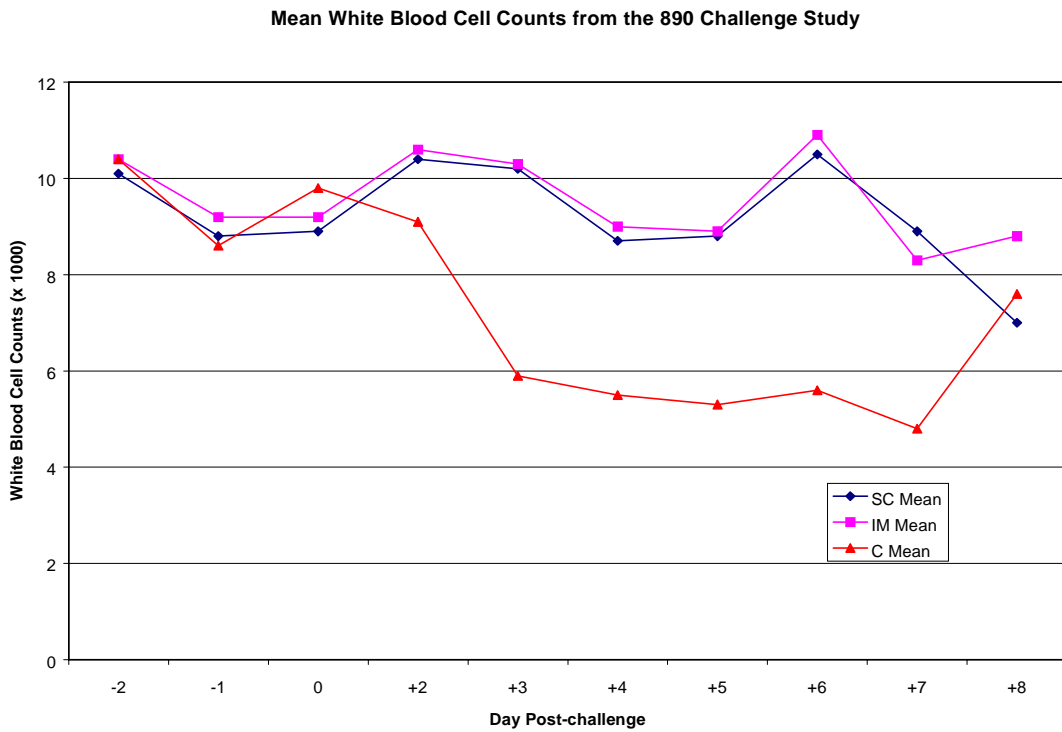


Chart 6. BVD Type 2 White Blood Cell Counts



BVD Type 1 Challenge Study Results Summary

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 Day 7 and Day 8 post-challenge
- white blood cell counts on Day 3, Day 4, Day 5, Day 6, Day 7 post-challenge

Additionally 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.

These results prove vaccinates were protected against clinical disease induced by heterologous BVD Type 1 challenge.

BVD Type 2 Challenge Study Results Summary

Statistically significant differences between vaccinates and controls were observed in:

- clinical scores on Day 7, Day 8, Day 9, Day 10 post-challenge
- rectal temperatures on Day 7 and Day 8 post-challenge
- white blood cells counts on Day 3, Day 4, Day 5, Day 6, Day 7 post-challenge

Additionally 10 of 10 controls had viremia that persisted for up to 7 days while only 4 of 20 vaccinates showed viremia for a single day.

These results prove vaccinates were protected against clinical disease induced by heterologous BVD type 2 challenge.