Qualification of a Diagnostic Assay for Bovine Viral Diarrhea Virus

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INTRODUCTION

Our goal is to develop diagnostic assays for the viruses associated with Bovine Respiratory Disease (BRD). BRD is a respiratory disease and is the result of five different viruses including Bovine Viral Diarrhea Virus (BVDV) types 1 and 2, infectious bovine rhinotracheitis, bovine parainfluenza-3 viruses, and bovine respiratory syncytial virus. BVDV causes immunosuppression of the infected adaptive immune system. Our main objective is to reduce the loss of the cattle population due to this virus. The ability to control and eradicate BVDV would reduce the significant economic loss of the cattle population. [1] Our project is to develop diagnostic procedures that will detect the infection in its many forms.

BVDV is currently one of the most costly diseases of cattle. Abortions, infertility, and/or embryonic deaths associated with…

…BVDV lead to significantly reduced reproductive performance and increased premature culling. [2]

.METHODS.

I have been learning certain scientific techniques that will be imperative in continuing this research. They include:

- **Cell culturing**
The process of growing cells under controlled conditions.

- **Cell Seeding 96 Well Plate**
A standard tool in analytical research and clinical diagnostic testing.

- **Hemocytometer**
Allowance of selective cell counting

- **Virology**
Replication of viruses in cell culture for use in clinical detection and isolation of viruses, in addition to how they grow and infect organisms.

Figure 2 (right) - Julie Estes in lab

Figure 3 - Stock image of seeding 96 well plate

.RESULTS.

(from earlier studies)

"Using viral neutralization assays, we found vital evaluation parameters were cell line, virus concentration, and incubation time. Using the establish protocol above we found that the average of the numerical protection average from the serums tested was around 169.24. An average standard deviation of 64.65 was obtained, which is a 33 % of test varied by about one dilution step from trial to trial."
-Adam Allen, Utah State University

FUTURE STUDIES

- Evaluate the effect of different bovine serum dilutions
- Qualifying viral neutralization assay protocols for use with BVDV.
- Testing cell lines, virus concentrations, and incubation variability for assay

Figure 1 - stock image of in vitro work

ACKNOWLEDGEMENTS

REFERENCES

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