



Technology Licensing Opportunity: BHV-1 subunit vaccine

Non-Confidential Summary

Background

Bovine herpesvirus type 1 (BHV-1) can cause venereal disease in cattle and is one of the factors in the bovine respiratory disease complex. Bovine respiratory disease costs the US cattle industry approximately 3 billion dollars annually. A subunit vaccine would circumvent the immunosuppressive properties of whole virus vaccines and add the potential for differentiating vaccinated from infected animals. Bovine herpesvirus-1 (BHV-1) glycoprotein IV (gD) serves as a good vaccine candidate because of its role in early virus infection.

Development Stage: Late

A truncated version of bovine herpesvirus-1 (BHV-1) glycoprotein IV (tgD) was produced in a novel, non-destructive expression system based upon regulation of gene expression by the bovine heat-shock protein in MDBK cells. The system secreted 360 micrograms of tgD per 4×10^6 cells into the cell medium in 18 days at 80% purity.

The vaccine has shown efficacy in experimental challenges and a field trial.

In the experimental challenge animals immunized twice with 7 micrograms or 21 micrograms of tgD formulated with VSA-3 generated significant neutralizing antibodies and were protected from a respiratory challenge with 10^7 pfu of BHV-1, as demonstrated by a significant ($p < 0.05$) reduction in clinical signs of respiratory disease and virus shedding in the nasal secretions post-challenge.

The protective capacity of the vaccine was also demonstrated in a field trial in the Netherlands under adverse conditions. Animals immunized twice, intramuscularly, with 25 micrograms of tgD formulated with Quil A were protected as evidenced by reduced BHV-1 outbreaks significantly reduced the virus transmission in herds.

Intellectual Property

5,879,895 Recombinant bovine herpesvirus type 1 polypeptides and immunoassays

5,585,264 Nucleotide sequences encoding recombinant bovine herpesvirus type-1 GI, GIII and GIV polypeptides

5,151,267 Bovine herpesvirus type 1 polypeptides and vaccines

Publications

Kowalski J, Gilbert SA, van Drunen-Littel-van den Hurk S, van den Hurk J, Babiuk LA, Zamb TJ. Heat-shock promoter-driven synthesis of secreted bovine herpesvirus glycoproteins in transfected cells. 1993. *Vaccine*. 11(11):1100-7.

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