

## SWINE HEALTH

**Title:** Efficacy of a *Streptococcus suis* vaccine for the prevention of *Streptococcus suis* infection. – **NPB# 00-131**

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### ABSTRACT

A 2.0 kilobase-pair *EcoRI* DNA fragment of *Streptococcus suis* type 2, was previously cloned, sequenced and partially characterized. Coupled in vitro transcription and translation experiment, and western blotting using polyclonal antibody raised against whole-cell of *S. suis* type 2 revealed that the DNA region encodes a protein with an electrophoretic mobility of 38-kilodalton which appeared to be cell wall associated. The protein was overexpressed, purified and evaluated for the biological activity with respect to protection. Two groups of five pigs were vaccinated either with VAC-38, containing the purified recombinant 38-kilodalton protein derived from *Streptococcus suis* serotype 2 strain 1933, or with a placebo vaccine. On the day of challenge three of the 5 pigs that received the VAC-38 showed strong antibody titer against the protein as determined by western blotting whereas the remaining two had low titers. No antibody to the protein was detected pre- and post-vaccination in the placebo (control) groups. After challenge, the placebo vaccinated pigs developed severe clinical signs characterized by lameness involving several joints, a depressed appearance, high temperatures and /or neurological signs. Three of the pigs died 48 hours post challenge resulting in 60% mortality. The other two pigs fully recovered over time. One of the five pigs that gave low antibody titer in the vaccinated group suffered minor arthritis and slightly elevated temperatures but fully recovered with time whereas the three pigs that gave high antibody titer and another pig that gave a low antibody titer showed no clinical signs of disease resulting in zero percent mortality. This preliminary result suggest that the recombinant 38-kDa protein of *S. suis* could be a good candidate for the development of a recombinant subunit vaccine for the prevention of *S. suis* infection in pigs. The polymerase chain reaction (PCR) and western blot techniques showed that the gene encoding the 38 kDa protein is conserved and expressed among the *S. suis* strains tested encompassing several serotypes, suggesting that the vaccine may offer cross protection across capsular types.

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