RESEARCH ABSTRACT
SWINE HEALTH

Title: Bacteriocins as potential alternative therapeutic agents for the control and prevention of *Streptococcus suis* infections in pigs - **NPB #04-005**

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II. Abstract: The swine industry is of significant importance in the North American economy. *Streptococcus suis* serotype 2, a Gram positive bacterium colonizing the upper respiratory tract of the pig, is responsible for many cases of septicaemias, meningitis and endocarditis in pig herds. Treatments by antibiotics can be effective to control *S. suis* infections if they are administrated early. However, the literature indicates the frequent isolation of *S. suis* strains resistant to penicillin and to other antibiotics often used. Therefore, studies aiming to develop alternative methods for the prevention and control of *S. suis* infections are essential. In this project, we investigated the ability of *S. suis* to produce bacteriocins, which are antibacterial molecules of proteinaceous nature. The non-pathogenic strain *S. suis* 94-623 was found to produce an antibacterial substance having the characteristics of a classical bacteriocin, including low molecular mass, resistance to heat, and susceptibility to proteolytic enzymes. In addition to be active on pathogenic isolates of *S. suis*, the bacteriocin also showed the capacity to inhibit growth of other Gram positive and Gram negative bacterial species isolated from swine. The addition of yeast extract to the culture medium significantly increased the production of the bacteriocin by *S. suis* 94-623. A purification protocol was designed and allowed to recover a fraction enriched in bacteriocin activity. Analysis of this fraction by electrophoresis on polyacrylamide gel suggested that the bacteriocin 94-623 possesses a molecular mass of 4-5 kDa. The logical extension of the project will be to evaluate the potential of a theraby based on bacterial interference, in which piglets would be inoculated with the bacteriocin-producing *S. suis* strain. This bacteria, once established, would thus confer protection against colonization by pathogenic isolates of *S. suis*.