

Project Number & Title: 2C-116: Live attenuated *Actinobacillus pleuropneumoniae* vaccine strains

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Aims and Objectives

The aims of this project were:

- Develop an attenuation method for *Actinobacillus pleuropneumoniae* that is accepted by the APVMA
- Attenuate relevant strains of *A. pleuropneumoniae*
- Do a safety trial (pen trial)
- Do a homologous trial with one of the attenuated strains

Key Findings

The trials in this project have shown that the live streptomycin-dependent vaccine is safe in naïve pigs and does not cause lesions or symptoms of disease despite being a live vaccine. The efficacy trial outcome definitely pointed to a weight loss of pigs not being vaccinated in the days past challenge. Even though not statistically significant, the vaccine did seem to improve the clinical signs with both vaccinated groups being much more alert and did not appear “tucked in”, a condition which suggests poor food consumption. The only animals to show no clinical signs were vaccinated animals. While some vaccinated animals did show clinical signs, the signs were displayed much later in the seven-day period after challenge than the control group. The control group had a higher lung score for three out of four pigs and from these pigs; *A. pleuropneumoniae* could be retrieved, while the vaccinated groups had, two out of seven pigs each with lesions.

Overall, it seemed that the vaccine displayed efficacy and the farm management thought it worthwhile to test the vaccine on non-naïve pigs. This vaccine could have significant benefits. Fewer doses than the current vaccines is required and can be worked in with the production schedule. *A. pleuropneumoniae* is one of the most expensive diseases as it affects pigs in the grow-out-phase of production – with many current vaccines failing to prevent deaths at this stage. If death at this stage of the production can be avoided with vaccination with a live streptomycin-dependent vaccine, there would be large cost savings

Application to Industry

The vaccine is currently in the process of being registered. This would mean that the vaccine will be for use in Australia and ACE laboratories are able to produce the vaccine. Further research is being conducted to look at transport options and storage options of the vaccine.

The toxin profiling determined that there are no extra toxins in the strains from different farms and states in the serovars used for vaccine strains. This is a reassuring result, as it means all the vaccine strains produced in this project will cover the range of field isolates in all four serovars. Hence, the vaccine could be used as a single strain vaccine when a single serovar is known to be the cause or as a multi-valent vaccine when more than one serovar is present as a challenge.