

PORK SAFETY

Title: Incidence and severity of *Arcanobacterium pyogenes* injection site abscesses with needle or needle-free injection methods - NPB # 08-239

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Scientific Abstract

198 nursery age pigs were used to evaluate the difference in the occurrence of injection site abscesses between needle-free jet injection and conventional needle-and-syringe injection systems. Pigs were fed for 21 d prior to treatment administration to acclimate the pigs to the environment of the Kansas State University Segregated Early Weaning (SEW) unit. On d 21 each pig was injected with aluminum hydroxide adjuvant in the neck and ham with needle-free jet injection (Pulse Needle-Free Systems, Lenexa, KS) and conventional needle-and-syringe injection. Needle-free and conventional needle-and-syringe injections were randomly assigned to pig side yielding a total of 396 injections per treatment with a total of 792 injection sites. Immediately prior to injection, the external surface of the injection sites were contaminated with an inoculum of *Arcanobacterium pyogenes*, a bacterium commonly associated with livestock abscesses. The pigs were then fed for a period of 27 and 28 d. On d 27 and d 28 the pigs were humanely euthanized and sent to the Kansas State Veterinary Diagnostics Laboratory where necropsies were performed and the injection sites underwent histopathological evaluation. The needle-free jet injection system was associated with more injection site abscesses than the conventional needle-and-syringe injection method for both neck ($P=0.0625$) and ham ($P=0.0313$) injection sites. Twelve abscesses were found at injection sites administered via needle-free jet injection method while only 1 abscess was found where a conventional needle-and-syringe injection method was used. At the neck injection sites, 5 abscesses were found while at the ham injection sites, 8 abscesses were observed. Of the 13 abscesses that were found, 10 developed on the left side of the animal and only 3 were seen on the right side. There were no differences between granulation formation for the neck ($P=0.51$) or ham ($P=0.29$) regions when comparing the needle-free and needle-and-syringe injection methods. In summary, the implementation of needle-free jet injection systems in market hog production will be beneficial to eliminate needles and needle fragments in meat products but, when in the presence of *Arcanobacterium pyogenes*, it may increase the occurrence of injection site abscesses in pork carcasses that will need to be trimmed in pork processing plants. Although more abscesses were associated with needle-free jet injection, their occurrence was still observed at a very low rate given that injection sites were intentionally contaminated prior to injection.

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