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## Drinking behavior of nursery pigs for oral vaccine administration

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### Introduction

Oral vaccination of swine via their drinking water is an increasingly common practice. Improved understanding of swine drinking behavior is needed to ensure immunization of an entire population. Our previous pilot study showed that 6 hours is required for 100% of nursery pigs in a pen to visit the drinker at least once<sup>1</sup>. The objectives of this larger study were to 1) evaluate how many hours are required to have 100% of nursery pigs visit the drinker at least once when observations began at 0700 h, and 2) to determine if overnight water withholding influenced these results. The water withholding component will be reported in a later publication.

### Materials and Methods

Eight pens (1.52 x 3.66 m) housing 23 to 26 seven-week old PIC pigs (10.91 ± 0.35 kg) per pen were used in a cross-over design to visually record drinking behavior. Pigs were randomly assigned to pen by sex. Each pen of pigs had *ad libitum* access to a corn-soybean meal based diet and access to water via one metal nipple-cup bowl drinker. Plywood sheets were placed between pens to disrupt social interactions between pigs of adjoining pens. Drinking behaviors were recorded over two consecutive days in late March 2006. Lights were turned on at 0700 h and off at 1600 h each day. Ambient temperature and humidity were recorded. One day prior to visual recording all pigs were identified with an individual number placed between their shoulder blades. One 12V color CCTV camera (Model WV-CP484, Panasonic<sup>®</sup> Matsushita Co Ltd., Japan) was positioned over each drinker. A pig was considered to be drinking when its head was above the drinker for at least 5 consecutive seconds<sup>2</sup>.

### Results

High and low temperature and humidity from 0700 to 1300 h in the room over both days were 29.1°C and 24.01°C, and 66.6% and 31.9%, respectively. Percent of pigs visiting the drinker within a 2 hour period ranged from 79 to 100%

over two days. Within a 4 hour period the range was 96 to 100%. By 6 hours 100% of the pigs had visited the drinker at least once (Table 1). Only one pen had 100% of the pigs visit the drinker within the first hour.

**Table 1.** Percent of pigs visiting the drinker at least once.

| Day                       | Rep | No. Pigs | Sex    | Time         |              |              |
|---------------------------|-----|----------|--------|--------------|--------------|--------------|
|                           |     |          |        | 0700 to 0900 | 0700 to 1100 | 0700 to 1300 |
| 1                         | 1   | 23       | barrow | 91           | 96           | 100          |
|                           | 2   | 26       | gilt   | 100          | 100          | 100          |
|                           | 3   | 23       | barrow | 87           | 100          | 100          |
|                           | 4   | 25       | gilt   | 92           | 100          | 100          |
| 2                         | 5   | 25       | gilt   | 100          | 100          | 100          |
|                           | 6   | 24       | barrow | 79           | 100          | 100          |
|                           | 7   | 24       | gilt   | 96           | 100          | 100          |
|                           | 8   | 26       | barrow | 100          | 100          | 100          |
| <b>Population Average</b> |     |          |        | 93.1         | 99.5         | 100          |

### Discussion

These results are consistent with our previous pilot study indicating a 6 hour vaccine administration period is necessary to ensure that 100 % of the nursery pigs have ample opportunity to visit the drinker for at least a 5 second drinking bout. We recommend administering oral vaccines via drinking water for a minimum of 4 hours with a preference for 6 hours.

### References

1. Johnson, A. K., et al. 2006. Drinking behavior of pigs housed in a conventional nursery environment. Abstr. No. 250 IPVS Congress, Copenhagen, Denmark.
2. Turner, S.P. et al. 1999. The influence of drinker allocation and group size on the drinking behaviour, welfare and production of growing pigs. Anim. Sci. 68:617-624.