**Validation of an Automatic, Liquid Feeding System in Piglets**

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Abstract

The use of piglets in biomedical research is becoming increasingly more common due to the similarities between swine and humans in both anatomy and physiology. In order to aid in testing the varying nutritional effects on piglet cognitive development, an automatic liquid feeding system was designed to distribute two different diets: a choline-deficient and a choline-sufficient, to 16 neonatal piglets over the course of a four-week trial. Our main objective was to test the effect of each diet on the animals’ tissues; however, this paper will focus on the validity of the automatic liquid feeding system used to distribute the diets. A series of four diet treatments were administered to the piglets using a commercial milk replacer. Piglets were taken from four sows, two of which were fed choline-deficient diets and the other two were fed choline-sufficient diets. Two piglets from each sow were fed choline deficient diets and the other two were fed choline sufficient diets. The piglets were a mixture of both male and female and were caged individually as to eliminate the competition for nutrients. A computer-based system was constructed to dispense the two diets to the correct pig at various intervals. The volume of diet distributed at each interval depended on the daily weight of the piglet. Prior to this study, the system calibration procedure was completed and recorded to ensure the system dependably delivered accurate liquid volumes. Following the trial, the piglets were humanely euthanized and their tissues were examined.