

ANIMAL SCIENCE

Title: Action of Leptin at the Hypothalamus for Reproductive Function
NPB#98-117

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Abstract

Twelve Meishan and twelve Yorkshire gilts were used to study the effects of diet and breed on leptin and LH concentration during estrous. Gilts were randomly assigned to a standard corn-soybean meal diet at approximately 2.5% of body weight or fasted. Estrus cycles for gilts were determined by observation of standing estrous in the presence of a boar. Two or more estrous cycles were observed to gain an estimate of the length, in days, of the estrus cycle for each. Twelve days before onset of expected estrus, jugular cannulas were inserted surgically and blood was collected at 08:00 and 20:00 hours. Three days prior to the onset of expected estrus, feed was removed and blood was collected every 4 hours. After standing estrus was established, blood was sampled every hour for the next 24-hour period and then collected every 4 hours for the next 36 hours until the pigs were killed humanely for collection of brain tissues. Fasting did not decrease basal LH ($.47 \pm .06$ vs $.57 \pm .06$ ng/ml) and but did decrease peak LH values ($3.44 \pm .51$ vs $5.18 \pm .51$ ng/ml; $P < .05$) in gilts during the estrous period. Fasted gilts also had decreased plasma leptin concentration during the protocol period when compared to fed gilts ($1.88 \pm .19$ vs $2.65 \pm .19$ ng/ml, respectively; $P < .01$) and lower peak leptin values ($2.59 \pm .51$ vs $5.22 \pm .53$ ng/ml, respectively; $P < .01$). Yorkshire and Meishan gilts had similar baseline values of LH prior to estrus, but Yorkshire gilts had lower LH peak values than did Meishan gilts ($3.09 \pm .51$ vs $5.53 \pm .51$ ng/ml, respectively; $P < .05$). There was no difference between plasma leptin values between breeds during the protocol period.

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