國立嘉義大學九十六學年度

動物科學系碩士班招生考試試題

科目：專業英文

1.試回答以下問題：（25%）

It was hypothesized that dietary supplementation of vitamins E and C has a synergistic effect (or interaction) on reducing the lipid oxidation in animal cells. Can you design an experiment to prove or test this hypothesis?

2.試將下列英文翻譯成中文：（25%）

It has been documented that myofibrils experience shrinkage during postmortem storage and this process can cause increased drip loss. Desmin, a cytoskeletal proteins, ties the myofibrils to the cell membrane and connects adjacent myofibrils in skeletal muscle cells. Limited degradation of desmin maintains the connections between the membrane and the myofibrils and increases the transfer of the shrinkage of myofibrils into the shrinkage of the whole muscle cells increasing drip loss during postmortem storage. The rate and extent of degradation of desmin, therefore, may greatly affect water holding capacity during postmortem storage.

3. Please read the abstract and answer the questions followed.（25%）

ABSTRACT

The relationship between body composition and the occurrence of puberty was evaluated using 93 Yorkshire x Landrace gilts. At approximately 60 d of age gilts were purchased and placed in a heated confinement unit where they were housed for the duration of the study. Ad libitum access to feed was provided throughout the study. Gilts were moved, mixed, and initially exposed to mature boars at approximately 120 d of age to encourage the earliest possible occurrence of puberty. Empty body weights of water, fat, protein, and ash at puberty were estimated using a deuterium dilution technique and prediction equations developed for this gilt population. There was considerable variation in age, weight, and all measures of body composition at puberty. Gilts were 138 to 240 d old and weighed 64.9 to 150.8 kg. Backfat thickness ranged from 17.5 to 44.0 mm. Gilts were composed of 32.4 to 64.3 kg of water, 15.6 to 53.9 kg of fat, 9.03 to 20.56 kg of protein, and 1.24 to 3.10 kg of ash. The coefficient of variation for fat to lean ratio at puberty was 15.39%. Linear and quadratic regressions showed that lifetime (birth to puberty) growth rate was not related to age at puberty ($P > .10$). Based on the variation in body composition observed it was concluded that the occurrence of puberty in gilts given ad libitum access to feed during rearing and initially exposed to mature boars at approximately 120 d of age was not related to certain minimum threshold amounts of body tissues or to a specific rate at which body tissue reserves were accumulated.

Source: Rozeboom *et al.*, 1995

Questions.

What's the purpose of this study?
Answer:

What does "heated confinement unit" mean?
Answer:

How much feed was provided to each gilt per day in the experiment?
Answer:

What's the minimum number of days for a gilt to attain puberty after their first boar exposure in this experiment?
Answer:

What was the experimental unit used in the experiment?
Answer:

4. Please read the abstract and answer the questions followed.（25%）

ABSTRACT

The effect of boar exposure during artificial insemination (AI) on semen backflow, fertilization, and embryo quality was evaluated. Gilts (~170 d) were induced into estrus with PG600, and ovulation was synchronized using hCG 72 h later. Estrus detection was initiated after PG600 and continued at 12 h intervals. At estrus, gilts were allotted to receive boar exposure (BE, n = 20) or no boar exposure (NBE, n = 20) during AI. Gilts receiving NBE were identified to be in estrus prior to AI and the boar was then removed for 1 h, whereas gilts in the BE group received 15 min of exposure during AI. Insemination occurred in crates at 12 and 24 h after onset of estrus with 3×10^9 sperm/80 mL. Backflow was collected continuously with samples taken at time 0, (during AI), and at 0.25, 0.5, 0.75, 1, 2, 4 and 8 h after first and second AI. The effect of treatment was evaluated for time of insemination (min), backflow (mL), and sperm in backflow samples. Oviducts were flushed 2 d after first AI to evaluate the effect of treatment on fertilization rate, accessory sperm numbers on embryos(scored 1 to 5), and embryo quality. There was no effect of first or second AI; therefore, data were pooled. Average duration of AI was 3.7 ± 0.2 min and was not influenced by BE ($P < 0.10$). However, during the initial stage of AI, BE reduced the volume of semen (18.6 vs 32.4 ± 3 mL) and the number of sperm lost (0.8 vs $1.3 \pm 0.15 \times 10^9$ sperm) compared to NBE ($P < 0.05$). There was a treatment x time effect ($P < 0.05$) for volume of backflow. By 45 min, the BE gilts lost more volume (9.0 vs 3.6 mL) compared to the NBE group,

but sperm loss did not differ. Between 1 and 8 h after AI, neither volume nor sperm loss was influenced by treatment. By 8 h, total leakage (65 vs 63 mL) and total sperm loss (1.6×10^9 vs 1.8×10^9 sperm) were not influenced by BE ($P > 0.10$). However, more accessory sperm ($P < 0.01$) were found on embryos for the NBE (≥ 11 sperm/embryo) compared to BE embryos (≤ 10 sperm/embryo). Despite this observation, percentages of fertilized embryos (99.5 ± 0.5 %) and number of embryos (11.5 ± 0.1) were not different ($P > 0.10$). In conclusion, Al in the presence of a mature boar did not affect total semen leakage, sperm loss, fertilized embryos, or embryo quality. The importance of boar exposure during insemination was evident from less leakage during insemination, but had no effect on fertility; this suggests that the elimination of boar exposure during AI may not be deleterious to reproductive performance.

Source: Willenburg *et al.*, 2003

Questions.
What's the purpose of this study?
Answer:

The authors talked about backflow in the article. Explain the meaning of 'backflow'.
Answer:

Translate and explain the following paragraph in Chinese.
"Gilts receiving NBE were identified to be in estrus prior to Al and the boar was then removed for 1 h, whereas gilts in the BE group received 15 min of exposure during AI."
Answer:

Please explain the meaning of the following terms mentioned in this article.
(1) oviduct flushing
(2) fertilization rate
(3) total semen leakage
(4) synchronized ovulation
(5) time of insemination

What was the advantage of boar exposure when AI was performed according to the results of the experiment?
Answer: