

somewhat lower than that necessary for maximum performance. This nutritionally induced reduction in ovarian activity may also be caused by a reduced level of secretion of gonadotropic hormones. When less than desirable nutrition is combined with an increased suckling intensity, a serious problem of reduced ovarian activity is created. Thus, suckling intensity must be taken into account in developing proper feeding and management techniques designed to achieve the goal of a calf per cow per year.

Testosterone in Boars after Treatment with Gonadatropins

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Story in Brief

Two experiments were conducted to evaluate changes in serum testosterone after the intravenous infusion of luteinizing hormone (LH) or the intramuscular injections of Pregnant Mare Serum (PMS). Four yearling Yorkshire boars of proven fertility were anesthetized and indwelling cannulae were placed in the anterior venae cavae. On the 8th day after cannulation, blood samples were collected at various times before and after infusion of 1 mg NIH-LH-S18. Serum testosterone increased to 16.7 ng/ml at one hour after LH infusion and remained elevated for at least 6 hours.

On the tenth day after cannulation, blood samples were collected before and after intramuscular injection of 1000 IU of PMS. Serum testosterone was significantly higher during 6 to 36 hours after injection, than during the preinjection or early post injection periods. Maximum serum testosterone occurred sooner after LH infusion than after PMS injection.

Introduction

Some of the problems associated with reduced reproductive efficiency in boars, such as loss of libido and decreased sperm production, may be due to reduced testosterone production by the testicle. It has

been demonstrated that testosterone controls libido in boars and, as has been shown in other species, probably also has a major role in normal sperm production. Previous studies with bulls have shown that administration of gonadatropic hormones causes increases in peripheral blood levels of testosterone. The objective of this study was to evaluate blood serum testosterone concentrations in boars after treatment with two gonadatropins, LH and PMS.

Materials and Methods

Four yearling Yorkshire boars of proven fertility were anesthetized and cannulae inserted into the anterior venae cavae. The boars were then placed in individual pens in an environmental chamber at 72° F and 50% relative humidity with 12 hours of light daily beginning at 0700. On the eighth day after cannulation, blood samples were taken at -2, -1.5, -1, -.5 and 0 hours before and .25, .5, 1, 1.5, 2, 3, 4 and 6 hours after the infusion of 1 mg NIH-LH-S18 via the cannulae. On the tenth day after cannulation, blood samples were collected at -2, -1.5, -1, -.5 and 0 hours before and 0.25, .5, 1, 1.5, 2, 3, 4, 6, 12, 24 and 36 hours after an intramuscular injection of 1000 IU of PMS. Serum samples were stored at 0°F until testosterone was quantified by radioimmunoassay.

Results and Discussion

Serum testosterone increased from 2.5 ng/ml at the time of treatment to 16.7 ng/ml at one hour after intravenous infusion of 1 mg of LH (Figure 1). Serum testosterone concentrations remained above pre-injection quantities throughout the 6 hour sampling period.

After intramuscular injection of PMS, serum testosterone concentrations were increased. Serum testosterone was significantly higher during 6 to 36 hours after injection than during the first 4 hour post injection (Figure 2). Maximum testosterone concentrations occurred at about 12 hours after PMS treatment.

Maximum serum testosterone concentrations occurred sooner after LH infusion than after PMS injection. Whether the longer time required to obtain maximum testosterone secretion after PMS is due to method of administration or to its biological activity is not known. PMS has mostly FSH activity with some LH activity.

Results of this study demonstrate that treatment of boars with LH or PMS will increase serum testosterone concentrations. Further research is necessary to determine if these gonadatropins are useful in the treatment of infertility which is caused by reduced testosterone production.

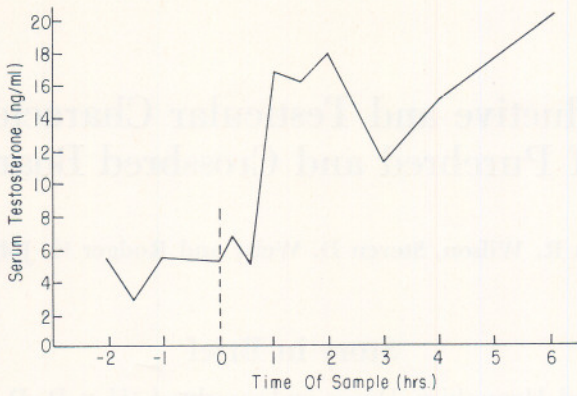


Figure 1

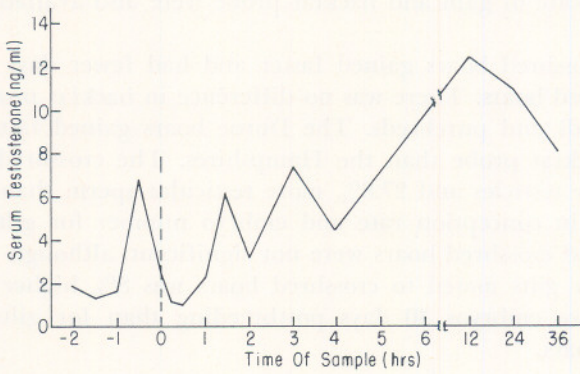


Figure 2