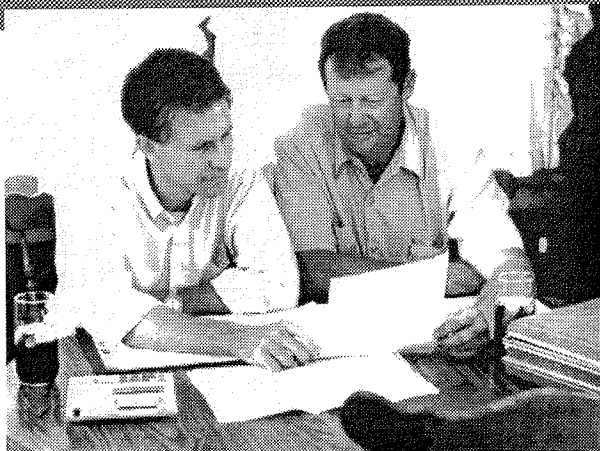


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The Endocrine Involvement in Reproductive Problems in Sows

Background.¹

The endocrine involvement in impaired reproduction in sows is not completely understood, but since the incidence of post weaning anestrus has been shown to be increased in sows fed low levels of energy during lactation, a link between nutrition and reproduction has been suggested. In addition, it is known that feed restriction during lactation results in a decreased release of the hormone LH which might be related to lower insulin levels in feed restricted sows compared to ad. libitum fed sows. Also, the thyroid hormones are involved in reproduction and they have a permissive role in ovarian function, but it has not previously been demonstrated whether lactation energy intake effects the concentration of thyroid hormones and if these hormones are related to the onset of estrus after weaning. Low feed intake during lactation has also been shown to decrease the serum concentrations of insulin-like growth factors I and II (IGF-I and IGF-II). However, it is unknown whether the concentrations of these growth factors also decreases in milk and in the follicular fluid of ovaries.

Objectives.

In order to investigate the above mentioned areas, three studies with primiparity sows were conducted. The main objectives of these studies were:

1. To measure serum concentrations of thyroid hormones during and after lactation in sows fed a low energy diet during lactation.
2. To establish a possible relationship between serum and milk concentrations of IGF-I and IGF-II during lactation, and between serum and follicular fluid levels of these growth factors after weaning.
3. To determine if low lactation energy intake negatively effects ovarian steroidogenesis after weaning.

Results.

The first experiment showed that feed restriction during lactation do affect the serum concentration of thyroid hormones. However, it was also shown that after weaning, the serum levels of thyroid hormones in restricted fed sows increases rapidly to reach the level of ad. libitum fed sows. Therefore, it still remains to be outlined how this decrease is associated with reproductive performance.

The second experiment showed that feed restriction during lactation decreases serum and milk concentrations of IGF-I and IGF-II, whereas no effect was noted on the follicular fluid concentration of neither of the two growth factors. Thus, IGF-I and IGF-II do not seem to be directly involved in changes in the reproductive performance of sows

Results from the third study indicated that sows fed low energy levels during lactation may experience an ovarian malfunction due to a decrease in the numbers of steroidogenic enzymes after weaning, which in turn might be responsible for the reproductive problems.

All the three studies have helped increasing our understanding of the reproductive problems associated with low energy intake during lactation, but more research in the area is still needed.

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