

Effect of split weaning on hormone release in lactating sows

K. Degenstein, A. Wellen, P. Zimmerman, S. Shostak, J. Patterson, M. Dyck and G. Foxcroft

Swine Research & Technology Centre, 4-10 Agriculture/Forestry Centre, University of Alberta, Edmonton, AB T6G 2P5; *Email*: george.foxcroft@ualberta.ca

Lactation is a period of high energetic demand for the sow, and in primiparous females subsequent fertility is often impaired. Split weaning is a technique that removes the largest piglets of the litter reducing the negative effects of the suckling stimulus to the sow and hopefully offsetting the effect of sow catabolism. Prolactin (PRL), released directly in response to suckling, can be used as an indicator of the level of demand the piglets are placing on the sow. On the other hand, luteinizing hormone (LH) and follicle stimulating hormone (FSH), stimulators of follicular development, could be used as indicators of subsequent potential fertility after weaning.

1st and 2nd parity sows were allocated to one of two treatments; 1) Control (C): all piglets weaned at day 19 of lactation (d19) and, 2) Split-Weaned (SW): the heaviest piglets split-weaned at d16, leaving the 5 lightest piglets to be weaned at d19 of lactation. Every 15 min, from d16 until 24 hours after weaning (96 hours in total) a blood sample was collected from SW and C sows, to measure plasma LH, FSH and PRL concentrations.

Plasma PRL in SW sows were consistently lower in the period between split weaning and final weaning (16.3 ± 1.4 vs. 19.5 ± 1.3 ng/ml) than in C sows, demonstrating that the removal of half the litter reduced some of the suckling input to the mother. Plasma FSH was consistently elevated in the SW sows (65.1 ± 7.0 vs. 53.2 ± 6.7 ng/ml), which may stimulate greater follicular development. Split-weaning increased LH concentrations (0.235 ng/ml vs. 0.173 ng/ml) and the number of LH episodes during lactation (12.6 vs. 6.9 episodes) in SW and C sows, respectively. Therefore, it can be concluded that a measurable hormonal response to split-weaning was detected, consistent with the view that an increase in post-weaning fertility might be expected.

Implications: A predictable response to split weaning exists in regards to hormone release. However, marginal effects on sow fertility indicate that the application of split-weaning in contemporary production needs further study.