

## 8. Follicular development at Day 0 and Day 4 after weaning of multiparous sows with limited lactational body weight loss

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Young sows mobilize body reserves to support milk production during lactation. This negative energy balance (NEB) negatively affects the development of follicles and oocytes that give rise to the next litter. Decreased insulin-like growth factor (IGF-1) levels due to the NEB are thought to play a role in this process. As this has hardly been studied in older sows, the current study focused on relations between the lactational mobilization of body tissues, metabolic hormones, and follicular development in multiparous sows. A total of 31 GY×DL sows of parity  $4.7 \pm 2.5$  were killed at either Day 0 or Day 4 after weaning. Average body weight (BW) loss during lactation was  $8.4 \pm 11.3$  kg ( $3.3 \pm 4.5\%$ ) and backfat loss was  $4.2 \pm 2.1$  mm. A higher BW loss (%) was related to higher NEFA levels at Day 0 ( $\beta_0 = 47.5$ ,  $P < 0.0001$ ;  $\beta_4 = -0.86$ ,  $P = 0.92$ ). Creatinine levels and follicle size increased with parity ( $\beta_1 = 0.11$ ;  $P = 0.0017$ ;  $\beta_4 = 0.14$ ,  $P = 0.011$ , respectively), while serum IGF-1 levels decreased with parity ( $\beta_1 = -9.6$ ;  $P = 0.014$ ). Surprisingly, follicular fluid IGF-1 levels were not related to follicle size on neither Day 0 nor 4, but it was strongly related to serum IGF-1 levels at Day 0 and affected by parity ( $\beta_1 = -13$ ;  $P = 0.0028$ ). In conclusion, in multiparous sows that experienced a mild lactational NEB, the weight loss was not correlated with follicular size or IGF-1 levels at neither Day 0 nor 4 after weaning. Higher parity sows had larger follicles, but lower IGF-1 levels in serum and in the large follicles. This makes the role of IGF-1 in follicle development less clear in these multiparous sows than in primiparous sows. Further studies are needed to confirm if a NEB affects follicular development via IGF-1.