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饲粮纤维水平对妊娠母猪繁殖性能、激素分泌及仔猪器官发育的影响

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Effects of Dietary Fiber Levels on Reproductive Performance and Hormone Levels of Gestating Sows and Organ Development of the Piglets

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摘要 本试验旨在研究饲粮纤维水平对妊娠母猪繁殖性能、激素分泌及仔猪器官发育的影响。选用399头日龄、体况相近的长白×约克杂交的后备母猪，随机分为3组，妊娠1～90 d分别饲喂含10.8%(n=132)、15.8%(n=132)和20.8%(n=135)中性洗涤纤维（NDF）的饲粮，妊娠91 d至分娩及泌乳期各处理饲喂相同饲粮。结果表明：1）第1胎时，10.8% NDF组母猪平均每窝产仔数比15.8% NDF组和20.8% NDF组分别高0.74(P<0.05)和1.05头(P<0.01)，平均每窝产活仔数比20.8% NDF组高1.01头(P<0.01)，哺乳仔猪第22天个体均重和窝均重较20.8% NDF组分别高0.36和3.31 kg (P<0.05)；第2胎时，15.8% NDF组母猪平均每窝产仔数比10.8% NDF组、20.8% NDF组分别高0.91和1.03头(P<0.05)，平均每窝产活仔数分别高0.92和0.95头(P<0.05)，仔猪出生窝均重比10.8% NDF组高1.86 kg(P<0.01)；2）饲粮纤维水平对第1胎母猪妊娠期血浆雌二醇和孕酮含量无显著影响(P>0.05)；第2胎时，15.8% NDF组和20.8% NDF组妊娠各阶段雌二醇和妊娠25 d孕酮含量显著或极显著低于10.8% NDF组(P<0.05或P<0.01)，但20.8% NDF组显著增加母猪新生仔猪肝脏、心脏及肾脏的指数(P<0.05)；3）第1胎和第2胎母猪的产程、泌乳期平均采食量及断奶后发情间隔时间均未受饲粮纤维水平的影响。结果提示，第1胎妊娠母猪饲粮NDF水平为10.8%，每日摄入NDF 222 g，第2胎妊娠母猪饲粮NDF水平为15.8%，每日摄入NDF 365 g可显著改善母猪的繁殖性能。

关键词： 纤维水平;妊娠母猪;繁殖性能;激素水平

Abstract: The study was conducted to investigate the effects of dietary fiber levels on reproductive performance and hormone levels of gestating sows and organ development of piglets. Three hundred and ninety-nine cross-bred (Landrace×Yorkshine) gilts with similar age and body condition were randomly allocated to three groups which were fed with the diets including 10.8% (n=132), 15.8% (n=132), and 20.8% NDF (n=135) during 1 to 90 days of gestation. Sows during last pregnancy (from d 91 to farrowing) and lactation period (from farrowing to d 24 of lactation) were fed with the same diets among all groups. The results indicated as follows: 1) in parity 1, the total average number of piglets born per litter in 10.8% NDF group was increased by 0.74 (P<0.05) and 1.05 piglets (P<0.01) than that in 15.8% NDF group and 20.8% NDF group, respectively; the average number of piglets born alive (healthy and weak) per litter was also increased by 1.01 piglets than that in 20.8% NDF group (P<0.01); average weight of live piglet and average litter weight on 22 d of lactation were increased by 0.36 and 3.31 kg than those in 15.8% NDF group (P<0.05). In parity 2, the average total number of piglets born per litter in 15.8% NDF group was increased by 0.91 and 1.03 piglets than that in 10.8% NDF group and 20.8% NDF group (P<0.05), respectively; the average number of piglets born alive (healthy and weak) per litter was also increased by 0.92 and 0.95 piglets than that in 10.8% NDF group and 20.8% NDF group (P<0.05), respectively; the average litter weight at birth of piglets was increased by 1.86 kg than that in 10.8% NDF group (P<0.01). 2) The plasma contents of estradiol and progesterone of gestating sows in parity 1 were no significant difference (P>0.05), while those in every stage of gestation and plasma progesterone content on 25 d of gestation in parity 2 in 15.8% NDF group and 20.8% NDF group were significantly lower than those in 10.8% NDF group (P<0.05); meanwhile the liver, heart and kidney indices of newborn piglets from parity 2 sows in 20.8% NDF group were higher than those in 10.8% NDF group and 15.8% NDF group (P<0.05). 3) No effects of dietary fiber levels on the interval from weaning to estrus,

duration of farrowing and average feed intake during lactation period were observed during their first and second parities (P>0.05). In conclusion, the reproductive performance of sows during their first and second parities is significantly affected by increasing dietary fiber levels. Daily intake of 222 g NDF (10.8% NDF in a diet) is beneficial to reproductive performance of primiparous sows, and daily intake of 365 g NDF (15.8% NDF in a diet) is suitable for sows in parity 2 to play the best reproductive performance. [Chinese Journal of Animal Nutrition, 2011, 23 (1): 25-33]

Keywords: fiber levels; gestating sow; reproductive performance; hormone levels