

Effects of Diets from Different Fiber Sources on SCFAs & Microflora of Sow Feces in Pregnant Sows

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At present, there is no consistent conclusion on the effects of dietary fiber from different sources on the reproductive performance of sows. In this study, 80 pregnant sows were randomly divided into 4 groups according to the same principle of backfat and litter size of each group, namely the control group (CON), alfalfa meal group (AM), beet pulp group (BP), and commercial fiber group (OM). The same feed were fed during lactation. The pre-experimental period was 7 d and the normal experimental period was 150 d. The purpose of this experiment was to investigate the effects of dietary fiber supplementation from different sources on inflammatory level, short chain fatty acids (SCFAs) and fecal microflora in pregnant sows. The results showed that 1) at 49 days of gestation (G49d), 84 days of gestation (G84d), 110 days of gestation (G110d), 28 days of lactation (L28d) of sows and at weaning of piglets (P28d), IL-1 β and TNF- α level were significantly lower in the AM group compared with the CON group. 2) at G49d of sow, the acetic acid in the AM group tended to increase ($P = 0.056$); at G110d of sow, compared with CON, the level of propionic acid in AM group was significantly increased, the level of valeric acid in AM group and OM group were significantly increased, and the level of acetate and isovaleric acid in AM and OM group had a tendency to increase ($P = 0.055$, $P = 0.093$); at the L28 day of sows, the isovaleric acid in the AM group was significantly higher. 3). At the phylum level, at G49d of sow, compared with CON, AM group was significantly decreased in relative abundance of *Bacteroidota*. 4). At the genus level, at P28d, the relative abundance of *Clostridium_sensu_stricto_1* in AM group was significantly lower than that of CON. 5) The results of correlation analysis showed that sow acetate level was significantly negatively correlated with the abundance of *NK4A214_group*; the valeric acid level was significantly negatively correlated with the abundance of *NK4A214_group*, and was significantly negatively correlated with the abundance of *norank_f__Eubacterium_coprostanoligenes_group*; butyric acid level was significantly positively correlated with the abundance of *unclassified_f__Lachnospiraceae*; piglet acetate level was significantly positively correlated with the abundance of *Subdoligranulum*. In conclusion, the addition of alfalfa meal to the diet during pregnancy can reduce the inflammatory level and improve intestinal health through reducing the relative abundance of harmful bacteria in the feces of sows and piglets and increasing the relative abundance of beneficial bacteria.

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