

16. Effects of dietary fibers with different physicochemical properties on constipation in sows during late pregnancy

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Constipation in sows during late pregnancy increases farrowing duration and thereby increases the number of stillborn piglets. Dietary fiber supplementation can change intestinal microbiota composition, thereby increasing intestinal motility and reducing constipation in many animal models. However, the effects and mechanisms of fibers with different physicochemical properties on constipation have not been fully explored. In this study, 80 sows were randomly allocated to Control (CON, basic corn-soybean meal) and one of three dietary fiber treatments with the same total dietary fiber content (TDF) from day 85 of gestation to delivery: LIG (replace 1.5% of wheat bran with lignocellulose), PRS (replace 2.0% of wheat bran with resistant starch), and KON (replace 2.0% of wheat bran with konjaku flour). Results showed that the defecation frequency and fecal consistency were highest in PRS (2.93/day and 3.03). PRS and KON significantly increased serum levels of gut motility regulatory factors, 5-hydroxytryptamine (5-HT), motilin (MTL), endothelin-1 (ET-1), acetylcholinesterase (AChE) and reduced serum inflammation factors TNF- α . Furthermore, PRS and KON significantly reduced the number of stillborn piglets compared to CON. Microbial sequencing analysis showed that PRS and KON increased short-chain fatty acids (SCFAs) producing genera *Bacteroides*, *Parabacteroides*, and decreased the relative abundance of endotoxin-producing bacteria *Desulfovibrio* and *Oscillibacter*. Besides, the relative abundance of *Turicibacter* was highest in PRS. In conclusion, PRS and KON reduced sow constipation, which was associated with higher levels of gut motility regulatory factors under the genus *Turicibacter* and SCFAs stimulation, thereby increasing gut motility and reducing the number of stillborn piglets.