Fibre for sows: Effects on satiety and behavior

Prof. Dr. Bruno A. N. Silva
Swine Nutrition and Environmental Adaptation
Institute of Agricultural Sciences
Universidade Federal de Minas Gerais (UFMG/ ICA)

Modern sow diets are typically high concentrate nutrient-dense diets with low fibre contents. Fibre has been found to promote benefits to the sow´s gut microbiota and gut motility. In addition, eubiotic lignocellulose or standard lignocellulose could be used as functional feed additives to improve sow performance, welfare, and feed efficiency by reduction in metabolic disorders such as insulin resistance.

Due to the great number of piglets, farrowing has become longer with a greater probability of depleting the sow's energy reserves, impairing farrowing kinetics, and predisposing piglets to hypoxia and consequently higher still born rates. Therefore, the supply of dietary eubiotic fibers in the diet, aiming to increase the energy supply to sows during farrowing, a time of high energy demand, might be an advantageous nutritional strategy at the end of gestation.

During gestation, feed allowance is limited in order to prevent excessive fatness and reduced reproductive performance. Although the sows are provided with sufficient nutrients for maintenance and reproduction, traditional diets are consumed within minutes and the feeding motivation of the sows remains high. In combination with poor environment this factor may lead to the channelling of natural foraging behaviours into a few simple behavioural elements, like bar-biting and sham chewing. Apart from stereotypic or manipulative behaviour, physical activity may also reflect satiety. It has been shown that when feed is restricted there is an increase in activity, which corresponds with the observation that locomotion is an integral part of appetitive foraging strategies in sows. Theoretically, in contrast with stereotypies, which appear to be mainly elicited by a meal, physical activity and manipulative behaviour may be shown not only just after a meal, but also several hours later, anticipating the next meal. Thus, these behaviours may also reflect prolonged satiety.

The use of eubiotic fibers during dietary restriction phases, such as gestation, shows benefits related to the promotion of immediate and longer satiety, reduction in incidence of stereotypies and associated with microbiota modulation, favors intestinal health and reduces digestive disorders. The effects of dietary fibre on satiety and feeding motivation depend on specific characteristics of fibre sources used meaning that the association of soluble and insoluble sources of fiber are necessary to be added to the diet and have a higher potential to prolong postprandial satiety, reducing stress and improving overall performance.