

estimate gut health should be based on the comprehensive analyses of molecular and cellular markers.

ASSESSMENT OF THE FIBRONECTIN ROLE IN THE INTESTINE HEALTH MAINTENANCE OF WEANED PIGLETS

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Relevance. The intestinal barrier protects the organism from the invasion of a wide range of pathogens. Barrier function is a critical component in ensuring the health of the intestinal system in piglets. Intercellular communications formed by tight contacts between specific types of adhesive proteins play a key role in the formation of a protective barrier. These junctions create a continuous and tight branching network between the membranes of neighboring cells, resulting in maximal consolidation of the apical intercellular space. Additionally, cell localization and migratory capabilities are facilitated by the interaction of cell adhesion proteins with components of the extracellular matrix (ECM), which establish specific intercellular adhesion between epithelial cells. One of common ECM component is fibronectin. The dynamic regulation of fibronectin content ensures a wide range of cell-ECM interactions and plays an important role in cell adhesion, migration, and tissue architectural remodeling. Therefore, imbalances in intestinal tissue fibronectin can impair cell-ECM interactions, intercellular signaling pathways, and the functional capacity of the intestinal barrier. Fibronectin molecules consist of two nearly identical subunits with a 250 kDa approximal molecular weight. Each monomer is composed with three types of repeated fibronectin domains that possess specific binding sites for other adhesive proteins, enabling cell-extracellular matrix interactions.

The functioning of the intestinal epithelial layer requires stable intercellular adhesion to ensure barrier function. Decreased fibronectin content may lead to disruption of the integrity of the epithelial layer and initiate the breakdown of the intestinal barrier. Furthermore, the effectiveness of the intestinal barrier can be assessed by both detecting and distributing fibronectin within the intestinal system. Strategies to maintain the barrier function of productive animals as well as their health are based on the application various compounds which can enhance intercellular adhesion power. Recently, biological effects of short-chain fatty acids and monoglycerides (SCFA-M) as cytoprotectors of intestinal barrier function have been actively investigated. An important argument in favor of these compounds is their multifactorial effects on the microbiome, immune response, and interaction of key cellular types in the intestine. Unfortunately, the molecular and cellular mechanisms of SCFA-M effect on the intestinal health of productive animals remain unclear.

The aim of our research was to determine the fibronectin content in the small intestine of piglets and to analyze the potential in fibronectin applying as a molecular marker of the intestinal barrier function.

Materials and Methods. The study carried out in the Scientific Research Center for Biosecurity and Environmental Control of Agricultural Resources (Biosafety-center). Two groups of piglets were used in present study (control and experimental). Every group consisted 12 animals ranging in age from 35 to 77 days. The control group of piglets was fed with a standard diet, while the animals of the experimental group received a dietary supplement of a SCFA-M mixture in a dose of 0.5 kg/ton. The mixture of monoglyceride with fatty acids consisted of monoglyceride (31%) with propionic, oleic, caprylic, capric, and lauric acids.

Segments of the duodenum were collected from pigs in each group on days 35 and 56 of their lives. The amount of fibronectin in the duodenal tissue was determined using the immunoblotting method. The collection of biological material was carried out in accordance with ethical and moral standards of the current legislation of Ukraine and Europe.

Results. To assess the effect of the SCFA-M on the productive data, an analysis of the average daily weight gain of piglets in the control and experimental groups was estimated. The results showed that feeding piglets with SCFA-M have no the negative impact on the productive data compared to the control group. Comparative analysis of fibronectin content in the small intestinal tissue of animals in the experimental group relative to the control group showed a positive correlation between the increase in the content of this molecular marker and the improvement of productive indicators. Considering this correlation, it can be predicted that the consumption of SCFA-M contributes to the formation of a solid extracellular matrix in the intestinal system. In turn, the interaction of cells with a more robust extracellular matrix contributes to strengthening the barrier function of the intestine, the health of piglets, and the improvement of productive data during the weaning period. The obtained results showed that the highest amount of fibronectin is characteristic of piglets on the 56th day of life. A 1.42-fold increase in fibronectin content after systemic consumption of SCFA-M reflects progressive strengthening of the intestinal barrier in pigs from 35 to 56 days of life. Therefore, barrier function assessment of the intestine could be based on the measuring of the molecular markers content. The detection of intercellular adhesion molecules content allows to assess the effectiveness of feed additives to provide an intensive pig farming.

Conclusions. The assessment of barrier function efficacy via measuring the specific adhesive contacts of epithelial cells is prospective manner to estimate intestine health of the animals. Decreased expression of intercellular communication proteins is an important index of intestinal barrier dysfunction in various animals, including pigs. Therefore, molecular markers evaluation can provide an opportunity to assess the effectiveness of feed additives on the efficiency of intestinal system restoration and the overall health of piglets.

CANINE LEISHMANIASIS: NECESSITY FOR PERIODIC UPDATING

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Introduction: *Leishmania* constitutes a genus of widespread protozoan parasitic species (approx. 30) that infect a variety of domestic and wildlife hosts (about 70 mammals), and humans, through the bite of the female sandflies – genera *Phlebotomus* and *Lutzomyia*, leading to disease called Leishmaniasis. Alternative vectors – ticks, mosquitoes and fleas, and other modes of