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Modulate Energy Homeostasis of Small Intestine under Low Energy Status in Piglets

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Abstract

Today there is no single standardized method for determining the activity of NSP destroying enzymes. Each NSP enzyme manufacturer uses own approach as well as its analytical conditions (pH, temperature, substrate, etc.). In practice, the determination of enzyme activity shows activity of a particular enzyme, included in a commercial product. This creates a difficulty to navigate for consumers and to compare this variety of available products in the market. In this work Cherkizovo research centre suggested to use concept of “enzyme efficacy” and developed new method for its quantitative analysis. It was demonstrated that the end product of the enzymatic reaction can act as a working indicator of the enzyme efficacy. The authors demonstrate simple method for estimation of enzyme efficacy and suggest using it as preliminary result when assessing the possibility of using them for a particular diet and various feed raw materials.

Keywords: Gastrointestinal Mucosa; Enzymatic efficacy; Animal feed; Feed enzymes

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Introduction

At weaning, young pigs are subjected to removal from the sow and littermates and are transported to a new environment, and their diet is abruptly changed from sow's milk to a solid diet, which causes low voluntary food intake and associated poor intestinal barrier structure and function. Weaning pressure might cause diminished energy consumption for support of mucosal design. Gln, Glu, and Asp are significant energy hotspots for the small digestive system. This review explored whether Gln, Glu, and Asp further develop the digestive morphology by means of managing the energy digestion in weaning piglets. Without a doubt, the weaning piglets are not eating sufficient food and their gastrointestinal mucosa is neglecting to process and assimilate adequate supplements to cover their energy necessity for upkeep, which are significant restrictions to working on the development of piglets subsequent to weaning. Moreover, the porcine gastrointestinal (GI) plot has a more comparable morphology and capacity to the human GI lot than other non-primate species [1]. During the weaning system, the high energy necessity of human posterity is upheld by the arrangement of high energy-thick and effectively stomach related food sources to decrease helpless posterity results. Hence, further developing the energy consumption from exogenous sustenance is judiciously filled in as a promising way to deal with safeguard both youthful domesticated animals creatures and human posterity from weaning pressure.

The digestive tract of a piglet has an outstandingly high energy interest because of the fast restoration of epithelium inside a couple of days. Subsequently, the epithelial cells of the GI plot require serious anabolic digestion. It has been shown that the GI lot addresses around 5% of body weight, though it is liable for around 20% of entire body O2 utilization. Glucose and lipids are significant hotspots for the stock and capacity of energy in cells. AMP-initiated protein kinase (AMPK) is the expert controller of energy digestion. AMPK expands adenosine triphosphate (ATP) levels by advancing glucose and lipids breakdown and restraining their union and capacity. Glycolysis, Krebs' cycle, and unsaturated fats beta-oxidation are the really catabolic cycles for glucose and lipids, separately [2]. Albeit all creatures get their natural energy from the cell-explicit oxidation of unsaturated fats, glucose, and amino acids in counts calories, for the gastrointestinal parcel, Gln, Glu, and Asp are the principle energy sources to keep up with stomach honesty and capacity. In the meantime, various examinations have announced that Gln, Glu, and Asp significantly affect digestive nourishment and wellbeing. Gln assumes numerous parts in directing gastrointestinal protein turnover, quality articulation, cell multiplication and safe capacity. Asp could further develop development execution of weaning piglets, and lessen the gastrointestinal injury instigated by Escherichia

coli lipopolysaccharide (LPS). By the by, youthful piglets couldn't incorporate adequate Asp, Glu and Gln, and a commonplace corn-and soybean feast based eating routine additionally can't give adequate measures of Asp, Glu, and Gln for protein union [3]. It has been exhibited that most dietary Gln and practically all Glu and Asp can't go into the gateway dissemination however is catabolized to CO2 in the small digestive tract. In this way, we accepted that dietary supplementation with Gln, Glu and Asp might re-establish the digestive energy homeostasis that is upset by weaning pressure through directing mucosal energy digestion in piglets. Notwithstanding, the understanding component actually should be additionally outlined. What's more, as far as anyone is concerned, this is the main review that joins Gln, Glu, and Asp, the significant energy wellsprings of the small digestive system, to explore the synergistic guideline of gastrointestinal energy homeostasis.

In the current review, we conjecture that Gln, Glu, and Asp could work on the little gastrointestinal construction of weaning piglets by means of directing the enterocyte energy digestion. The impacts of supplementation of Gln, Glu, and Asp on the gastrointestinal morphology, energy metabolites, and AMPK pathway still up in the air in weaning piglets on d 5 and 21 post-weaning [4].

Low energy feeding may increase the susceptibility of piglets to stress, which may decrease the efficacy of Gln, Glu, and Asp on the restoration of energy balance. These findings provide new information on nutritional intervention for insufficient energy intake in weaning piglets.

References

1. Blachier F, Boutry C, Bos C, Tome D. (2009) Metabolism and functions of L-glutamate in the epithelial cells of the small and large intestines. Am J Clin Nutr 90: 814S-821S.
2. Bouillaud F, Alves-Guerra MC, Ricquier D (2016) UCPs, at the interface between bioenergetics and metabolism. Biochim Biophys Acta 1863: 2443-2456.
3. Burgess SC, He T, Yan Z, Lindner J, Sherry AD, et al. (2007) Cytosolic phosphoenolpyruvate carboxykinase does not solely control the rate of hepatic gluconeogenesis in the intact mouse liver. Cell Metab 5: 313-320.
4. Chen L, Wang J, You Q, He S, Meng Q, et al. (2018) Activating AMPK to restore tight junction assembly in intestinal epithelium and to attenuate experimental colitis by metformin. Front Pharmacol 9: 761.