

Five ways that a pre-starter feed can keep your pigs healthy

Post-weaning diarrhoea, colibacillosis, oedema disease, streptococcus problems, ear necrosis – the number of health challenges piglets face after weaning is numerous. Helping piglets to cope with these challenges becomes increasingly important, as there was a huge increase in the number of live born piglets during the last decade.

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The inevitable result is an increased number of lightweight and vulnerable piglets. This results in a huge challenge in young animal nutrition: rearing more light piglets which are more vulnerable for diseases with less antibiotics.

Good nutrition is essential to keep piglets healthy, and a well-balanced prestarter diet can help to cope with this challenge. This article looks at how a prestarter diet specifically affects the health of your piglets.

Promoting feed intake around weaning

The feed intake before weaning is one of the most important influencing parameters on piglet health after weaning. A tasteful prestarter diet not only increases feed intake of piglets before weaning but also increases the number of piglets that is eating before weaning.

Under commercial conditions, only 60% of piglets eat before weaning. Increasing this number will have positive effects on the overall health of piglets after weaning.

Piglets eating before weaning take three times less time to start eating after weaning compared to non-eating littermates.

This is essential for maintaining intestinal integrity and functionality in weaned piglets.

The sudden loss of nutrient intake after weaning will severely compromise the intestinal mucosal mor-

phology, reducing its digestive, absorptive and secretory capacity.

The longer it takes before piglets start eating, the bigger this impact. This negative impact even increases when piglets are weaned at 21 days of age or earlier. For this reason it is always recommended to feed the same diet that is fed before weaning until three days after weaning.

If the piglets receive a familiar diet after weaning, they will start eating a lot faster. Research showed for instance that piglets eating before weaning need less veterinary treatments for meningitis compared to non-eating littermates (Table 1).

Piglets are very prone to sweet and umami tastes, but also have well developed preferences for different cereals, protein sources and acids. Processing steps also have a huge influence on feed intake of piglets. Selecting the raw materials with care is essential to stimulate feed intake of piglets.

In addition, the nutrient composition also has a huge influence on the feed intake of the piglets. Unbalanced amino acid compositions for instance have a huge negative influence on the feed intake of piglets.

Stimulating intestinal development

For every 50g the piglet eats before weaning, villus height is increased by 10%. By eating solid feed before weaning, piglets develop the acid secretion capacity in the stomach and the secretions of digestive enzymes like amylase and protease.

The development of these intestinal functions is essential to digest

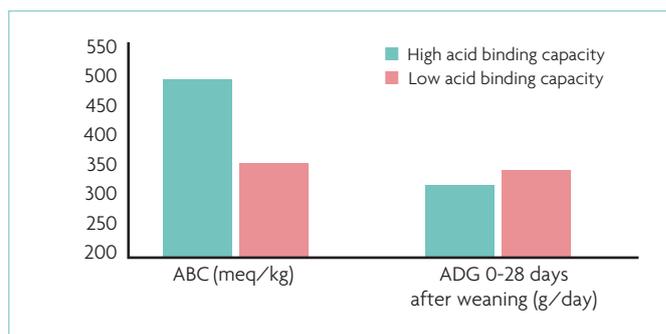


Fig. 1. Effect of different acid binding capacities on piglet performance.

the vegetable proteins and carbohydrates after weaning. A proper digestion after weaning will result in a lower amount of undigested nutrients, limiting the risk for the development of post-weaning diarrhoea.

Steering intestinal microbiota

By feeding special nutrients in the creep feed, the intestinal microbiota can be influenced in the early stages. This will impact the post-weaning intestinal health, general health and disease resistance.

For instance Aromabiotic medium chain fatty acids are well known for their selective antibacterial effect.

This will result in a shift in the intestinal microbiota from the more pathogenic, to the beneficial bacteria. The protein content and digestibility of the feed is also important. Undigested protein causes intestinal imbalances and diarrhoea problems.

However, an adequate supply of all essential amino acids is impor-

tant to stimulate the growth of piglets after weaning. Only some amino acids can be added synthetically, so there is a limit in the reduction of the crude protein level.

To help piglets to digest the protein in the feed, using prestarters with a high amount of well digestible protein sources and a strict attention for the acid binding capacity of the feed is essential.

Diets with a high acid binding capacity will inhibit the piglet from reducing the stomach pH, and will limit protein digestion. A careful selection of raw materials is essential to control the acid binding capacity of the piglet diet.

In the Babi-prestarter diets, Nuscience looks to combine low acid binding capacities with excellent digestible protein sources. This results in excellent piglet performances (Fig. 1).

Maintaining gut barrier functioning

A well-working intestinal barrier is essential in maintaining piglet health. The intestinal barrier has to allow the absorption of nutrients, while it has to avoid pathogens, antigens and endotoxins from entering the piglet's body.

After weaning, piglets face a period of intense stress: separation from the sow and littermates, transportation to a new environment (room, building or even farm), mixing with piglets from another litter which is associated with the

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Table 1. Piglets eating before weaning need less veterinary treatments for meningitis compared to non-eating littermates.

	Non-eater	Eater
Weaning weight	6.9	7
ADG after weaning (g/d)	418 ^b	442 ^a
Mortality (%)	4.9	4.3
Piglets treated due to meningitis (%)	3.5 ^a	0 ^b

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inevitable social hierarchy fights, supply of new diets as well as unfamiliar drinking nipples, increased exposure to pathogens and (dietary as well as environmental) antigens.

This causes an increased oxidative stress, coupled with a degeneration of the gut barrier function, and a state of inflammation of the intestine of the piglet. This effect is mainly important the first days after weaning.

Compared to villus length, which returns to preweaning values 14 days after weaning, the gut barrier function takes much longer to recover with long lasting effects on piglet health and performance.

Some ingredients are well known to reduce this intestinal inflammation, while other raw materials, rich in antigens, are known to induce inflammation.

For this reason, before and immediately after weaning it is important to start the piglets with a feed that will lead to a lower prevalence of this intestinal inflammation.

Improving the feed intake of piglets immediately after weaning (Table 2) and providing piglets with an adequate supply of different synergistic antioxidants, like vitamin E, C, selenium and natural antioxidants like Vitanox, can also reduce this degeneration.

	Low feed intake first three days after weaning	High feed intake first three days after weaning
Ileal villus height (µm)	278.4	301.6
Absorptive capacity (%) ^a	10.52	15.29
Intestinal permeability (%) ^a	31.86	16.45
^a Absorptive capacity and intestinal permeability measured by the lactulose mannitol permeability challenge test		

Table 2. Higher feed intake immediately after weaning improves the gut barrier function.

Stimulating immune system development

It is well known that piglets face problems with their immunity around weaning: their own immune system is not fully developed yet, while they do not have the passive immunity of the sow milk available anymore.

On top of this, research has shown that stress situations cause a reduction of the longevity of the neutrophils. These neutrophils are the first line of defence against infections.

The combination of this immunity gap with the large number of stressors around weaning, the low feed intake, and the immature intestinal

tract means that piglets are very susceptible to disease. This causes an extremely high vulnerability for infections with *E. coli*, *S. suis*, or an increased prevalence of ear necrosis.

Some ingredients like medium chain fatty acids are well known to improve the longevity of these neutrophils, and stimulate the immunity of the animals. Other ingredients like blood plasma contain immunoglobulins that support the immunity of the animals in this critical period.

Furthermore, mycotoxins are known to suppress the immune system of the piglets. For this reason the use of a prestarter diet with cleaned cereals of high quality

around weaning is important to maintain the immune function of piglets.

Next to this multiple vitamins like vitamin A, or the B vitamins, and trace elements like zinc or selenium are important for the development of the immune system. Animals with a well developed immune system are also less susceptible for infections and diseases in the fattening phase.

In the Babi range, Nuscience combines excellent feed intake with health stimulation of piglets and a good development of the immune system, having long term effects on the piglets.

According to different health situations, genetics and weaning ages, Nuscience has different prestarter feeds available, focusing more on stimulating feed intake or preventing intestinal disturbances, which suit each farm. When weaning young piglets, the focus is placed more on promoting feed intake with the Babi Delicious line, while in severely health-challenged farms, intestinal disturbances can be avoided with the Babi Robust line. The Babi Dynamic line meets both challenges half way. ■

References are available from the author on request