



Uniferon Best Practice Recommendation

Immune system performance and iron

Iron is important for cells of the immune system. Iron deficiency, therefore, negatively influences the immune system in piglets.

A critical transition – the immune system development of a piglet

Young piglets are highly susceptible to opportunistic infections. In very young piglets, antibodies passed over from the mother sow, and innate immunity are their major defence mechanisms. With age, active adaptive immunity becomes increasingly important as environmental antigens stimulate the immune system. The proper functioning of adaptive immunity is mainly important at the time of weaning and thereafter, when the passive immunity transfer over the sows milk is definitely ceased.

Iron is an essential nutrient for ensuring vital body functions

It is well known that iron is an essential component of haemoglobin and that iron deficiency results both in a reduction in circulating haemoglobin and a reduction in red blood cells – a condition characterised as microcytic hypochromic anaemia.

Perhaps less well known is the fact that iron is important for cells of the immune system and that iron deficiency is associated with an impaired functioning of the immune system:

Research has shown that the immune system is weakened when iron is insufficient. A fully functional immune system is

able to ward off the activity of hostile microorganisms. A measure of this can be made by the count of cells that become active in an immune response (total leucocyte count, relative and absolute neutrophil count and absolute lymphocyte count) in peripheral blood. Data shows that these indicators of immune responsiveness come out significantly lower in iron-deficient piglets compared to iron-supplemented piglets. It has been found, that an impairment of lymphocyte activity and a decrease in circulating B-lymphocyte numbers is present in iron-deficient piglets.

What is at stake?

A weakened performance of the immune system of a piglet is accompanied by overgrowth of microorganisms that causes various types of infection that will eventually lead to infections of the whole litter including the piglets with a sufficient supply of iron.

Moreover, the severity of infections will increase when the immune system is impaired. Piglets with iron deficiency anaemia are, therefore, also more prone to diarrhoea.

The lower red blood cell parameters seen in iron-deficient piglets have a detrimental effect on both body weight and weight gain. Although the red blood cell parameters in the iron-deficient piglets can be increased with iron supplement, the body weight remains significantly lower compared with piglets supplemented at the age of 3 days.

Sincerely
The Uniferon Team