

## **Iron Deficiency Anaemia or Piglet Anaemia**

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### **Introduction**

Piglet Anaemia also called Iron deficient anaemia is a hypochromic-microcytic anaemia generally associated with young, rapidly growing piglets deprived of Fe in their diet or from their environment. It has been a potential problem since swine producers first farrowed litters in confinement, denying the nursing pig access to iron in the soil. The pig is born with a normal level of haemoglobin in the blood of 12-13g/100ml and this rapidly drops down to 6-7g by 10 to 14 days of age. A shortage of iron results in lowered levels of haemoglobin in the red cells, (anaemia), a lowered capacity for the carriage of oxygen around the body and an increased susceptibility to disease.

Iron is a vital component in forming hemoglobin, a protein comprising about one-third the weight of the red blood cell. Hemoglobin within the red blood cell has the unique function of carrying oxygen from the lungs to the tissues of the body in support of cellular metabolism and transporting carbon dioxide resulting from cellular metabolism back to the lungs. When there is a deficiency of iron, the baby pig cannot synthesize an adequate amount of hemoglobin. Thus baby pig anemia is a condition of the blood in which the oxygen-carrying capacity is greatly reduced, and this condition is generally due to iron deficiency) The piglet is born with limited supplies of iron and if it had been born in the wild would depend on supplementation to its diet from iron bearing soils. Indoors the pig has no access to iron other than to the sows' milk (which is deficient) until it starts to eat creep feed

### **Causes of Iron Deficiency Anemia**

Iron deficiency develops rapidly in nursing pigs reared in confinement because of

1. Low body storage of iron in the newborn pig,

2. Low iron content of sow's colostrums and milk,
3. Elimination of contact with iron from soil, and
4. The rapid growth rate of the nursing pig.

The baby pig is born with a total of about 40mg of iron in his body, most of which is present in the form of hemoglobin in blood and storage forms in the liver. With an iron requirement of about 7mg daily to maintain blood hemoglobin level in the normally growing baby pig, it is apparent that without supplemental iron, body stores will not last very long.

#### ***Low iron content of sow's colostrum and milk.***

The concentration of iron in colostrum is seldom greater than 2ppm, and in milk is lower, averaging about 1ppm. Because of the low concentration of iron in sow's milk, the baby pig cannot obtain more than about 1mg of iron daily from this source. This falls far short of his requirement for 7mg daily. Thus, under natural conditions piglet could obtain his iron from the soil. When the pig is placed on concrete or reared in confinement in a central farrowing facility, he is denied this opportunity.

#### **Rapid growth rate of the nursing pig.**

Compared to other domestic mammals, the baby pig has a tremendous ability to grow.. This rapid growth of the nursing pig with the resulting increase in plasma volume demands a high intake of iron to maintain adequate hemoglobin.

#### ***Deficiency Symptoms of Iron***

The most common parameter to indicate Fe-deficient anaemia is haemoglobin concentration. In 1979, the National Research Council created a classification system by which pigs could be categorized base on the extent of the anaemia by their Hb concentration, measured in grams /decilitre as follows:

- i. Pigs with Hb levels 10 or above are normal.
- ii. Hb level of 9 is the minimum level for optimum performance.
- iii. Hb level of 8 indicates a borderline anaemia.
- iv. Hb level of 7 is the level in which anaemia retards growth.
- v. Hb level of 6 is considered severe anaemia and 4 as severe anaemia with increase mortality.

The first sign of Fe-deficient anaemia is roughness of hair coat and lost of pigmentation of mucus membrane. The skin is wrinkle, pigs exhibit listlessness, characterized by drooping of the head and ears combine with lack of appetit, diarrhoea and reduce weight gain. In severe

cases, pigs may be identified by dyspnea, increase heart and respiratory rates, the animal present systolic murmurs due to reduced blood viscosity; pigs die suddenly due to anoxia. Affected pigs have higher prevalence for subcutaneous edema in the neck, shoulder and limb areas . Anaemic pigs show higher susceptibility to infectious diseases (such as pneumonia, influenza and GIT disorders) because a dietary Fe level is directly related to antibody production

### **Diagnosis**

This is based on the clinical signs, the lack of any supplemental iron and the haemoglobin level in the blood. If this is less than 8g/100ml the piglet is becoming anaemic.

### **Treatment and Prevention of Piglet Anaemia**

Several management approaches have been postulated and they include:

- Various oral mixtures can be used and are placed on the back of the tongue; these are best given within 36 hours of birth to be effective. Iron can also be provided in piglets' drinking water, with a dispenser placed in the creep area. 1.8% Ferrous sulphat @ 4ml/day for seven days start from birth onwards.
- Iron sulfate paste can be painted onto the sows teats every 2–3 days.
- Use of iron licks or blocks.
- Administration of 200mg (i/m) of iron dextran as a single dose is sufficient.

The easiest method is to give the piglet an injection of 150- 200mg of iron dextran in either a 1 or 2ml dose. Iron is best given from 3 to 5 days of age and not at birth, because a 2ml dose at birth causes considerable trauma to the muscles and repeat on 14<sup>th</sup> day.

- Oral pastes available ad lib have been used but the uptake within any litter is variable and a few piglets remain anaemic.