Supplemental iron crucial for piglets

By SAM HOLST*

Piglets are born with very limited iron reserves — an estimated 30 mg total — and sow’s milk is a poor source of iron, supplying only about 1 mg of iron per pig per day (Daykin et al., 1982).

This, in addition to indoor production, which removes access to iron-rich soil, makes the provision of supplemental iron to piglets crucial.

For optimal growth, pigs utilize an estimated 7-16 mg of iron per day, depending on their growth rate.

As herds continue to become more productive with increasing litter sizes and piglet growth rates, it’s important to evaluate iron supplementation practices to avoid piglet anemia in a herd.

Essential for life

Iron plays a key role in several metabolic pathways; most importantly, it is essential for the function of hemoglobin.

Hemoglobin is the component of red blood cells responsible for the transport of oxygen and carbon dioxide to and away from all tissues. In addition, iron is needed for oxygen utilization, cell metabolism, enzymatic systems and immune function.

Pigs that have inadequate iron are considered anemic. Visually, pigs with moderate to severe anemia display several signs, including: a roughened hair coat, wrinkled skin, lethargy and, most notably, a pallor of the skin and extremities. Labored breathing and mortality can be observed in severe cases.

Subclinical anemia, which may not lead to such overt signs, is often caused by an insufficient iron supplementation or increased utilization by the pig and has the potential to reduce growth and increase disease susceptibility both preweaning and postweaning.

Iron sources

While a multitude of methods have been utilized to provide supplemental iron to piglets, the two most common are an injection of iron complex or applying oral iron preparations for fecal absorption.

Oral iron preparations are placed on a mat or in a shallow pan in the farrowing stall multiple times during the lactation period.

Providing an oral source of iron is an enticing method, although there are concerns that orally available iron is not as well absorbed by the small intestine in young pigs. Additionally, iron administered in this manner does not allow for individual dosing; therefore, the potential exists that not all pigs will receive an adequate amount.

Injecting pigs with iron dextran is generally accepted as the most effective method of preventing piglet anemia (Daykin et al., 1982). A typical protocol consists of a 200 mg dose of iron dextran delivered through an intramuscular injection between day 1 and 3 following birth.

The advantage of injecting iron is that it ensures that each pig receives the proper dose. This protocol has been the gold standard in anemia prevention for many years; however, the change in iron requirements related to performance increases still warrants the need for all programs to be reassessed.

Providing enough?

If anemia is a concern within a herd, it’s important that hemoglobin testing be part of the full diagnostic workup. A typical approach would consist of collecting blood from multiple pigs prior to weaning and evaluating packed cell volume (PCV) or hemoglobin concentration. Both tests are blood indicators of the amount of functional iron present.

PCV represents the percentage of red blood cells in whole blood (which is normally 32-50% for pigs), while hemoglobin concentration is simply the amount of hemoglobin present in whole blood.

Table 1 provides observations from different stages of anemia (Victor and Mary, 2012).

Determining hemoglobin concentration often has required that samples be sent to a diagnostic laboratory to be evaluated. However, a handheld device used in the human medical field has recently become available. The HemoCue® 201+ system (HemoCue AB, Angelholm, Sweden) allows a quick and accurate hemoglobin analysis to be completed on the farm.

Optimize administration

Dose. Table 2 expresses the theoretical iron requirement for a slow-, medium- or fast-growing pig based on a 21-day lactation period.

Based on these calculations, a 200 mg dose of iron would satisfy the requirement for slow-growing and medium-growing pigs, but fast-growing pigs would become iron deficient prior to weaning.

Two options to avoid this potential iron-deficient period are: (1) increase the initial dose of iron, or (2) administer additional iron prior to weaning.

According to the calculations, a single, 250 mg dose would be more likely to meet the requirements of the majority of pigs. However, dosages in excess of 200 mg can be associated with arthritus, septicaemia and colibacillosis (Murphy et al., 1997). These adverse signs are not seen in every case, though, and farms have implemented protocols in which dosages exceed 200 mg with no negative effects.

Conversely, a second injection of 200 mg prior to weaning has been shown to reduce the prevalence and severity of anemia in pigs during the nursery phase (Walsh et al., 2014).

Timing. Traditionally, injectable iron programs have been set up to deliver an injection within the first three days following birth. Still, it may be advantageous to administer sooner rather than later.

With continually increasing litter sizes, the potential exists for a proportion of pigs to be born anemic as sows have a limited amount of iron they can transfer to their litters.

Additionally, research on the timing of administration has shown that pigs that receive an iron injection on the day of birth have higher hemoglobin concentrations during the suckling period than pigs injected on day 3 (Lemacher and Bostedt, 1995).

Summary

While providing supplemental iron to suckling piglets has been a routine practice for decades, it would be beneficial to review current programs and fine-tune protocols if necessary.

Analysis of blood samples is an effective way to determine the adequacy of an iron program. Optimizing an iron program can help maximize pig health and performance and is worthy of evaluation in all systems.

References


Bayer to sell equine products to Merial

BAYER Healthcare Animal Health has entered into a definitive agreement to sell its LegproLine (hyaluronate sodium) products to Merial's portfolio of products that improve the health and performance of horses, said the company.

“LegproLine is a product that’s been used by veterinarians for more than two decades, and Marquis (ponazuril) equine products are considered the gold standard in equine products,” said Merial Chief Executive Officer Carl Halström.

LegproLine (hyaluronate sodium) is a joint lubricant for horses suffering from joint pain and lameness caused by arthritis and other joint diseases.

LegproLine contains one of the most biologically active forms of hyaluronate sodium, which has been shown to be beneficial for many joint health issues in horses.

LegproLine is currently marketed in more than 70 countries and is used by veterinarians and horse owners around the world.

“This transaction will allow our company to continue its commitment to providing innovative solutions to veterinarians and horse owners,” said Merial Chief Executive Officer Carl Halström.

The purchase, expected to be finalized in early 2015, further broadens Merial’s portfolio of products that improve the health and performance of horses, said the company.

LegproLine is a Sanofi company that employs around 6,200 people and operates in more than 100 countries.

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