

SHORT COMMUNICATION

COMPARISON OF ORAL IRON AND INJECTABLE IRON
IN THE PREVENTION OF IRON DEFICIENCY
ANAEMIA IN PIGLETS

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Target Audience: Private and commercial pig producers

ABSTRACT

An oral iron compound or an injectable iron (100mg iron per treatment) was administered to baby pigs on day 3 - postfarrowing and were compared with untreated littermates. There was no significant difference ($P > 0.05$) between the pigs receiving the oral and the negative control in serum iron or total iron binding capacity. Pigs that received iron by injection had significantly higher serum iron and packed cell volume ($P < 0.05$), and a lower total iron binding capacity compared with pigs given oral iron or untreated control ($P < 0.05$)

Keywords: Piglets, iron, anaemia.

DESCRIPTION OF PROBLEM

The baby pig receives most of its nutrients from the sows milk during its first 2-3 weeks of life (1). Their requirements for these nutrients are quite high at birth. Iron (Fe) is the only nutrient required by baby pigs that is deficient in milk (1). The pig is born with about 50mg of Fe in its body and it requires 6-8mg of Fe per day for haemoglobin synthesis. Milk has low iron content (2). It supplies only about 1mg/day, so if not given supplemental Fe, the pig will become anaemic within 3-4 days (1). It is therefore the aim of this study to compare the oral and injectable means of supplying supplemental Fe in the prevention of iron deficiency anaemia in piglets.

MATERIALS AND METHODS

Fifty four crossbred (Landrace x Largewhite) piglets were used in the three week experiment. After the sows had finished farrowing, the piglets were allotted to groups. Each of the sows was allowed to nurse six piglets and there were three sows in each of the three groups. The piglets in group 1 received 100mg of an oral iron compound (Iron fumerate), group 2 received 100mg of iron dextron IM in the neck on day 3, while the last group comprised the untreated piglets which served as the negative control. The pigs were weighed

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at one, two and three weeks of age and were bled at each week for serum iron (SI), total iron binding capacity (TIBC) and packed cell volume (PCV) determinations.

RESULTS AND DISCUSSION

Weight gains were similar for the groups. Growth rate was probably not affected in this study, because typically at least three to four weeks are required to observe a depression in growth rate from anaemia (3). Measurements of serum iron (SI) concentration and total iron binding capacity (TIBC) are widely used in the diagnosis of iron deficiency (2). There was no significant difference in the SI or TIBC levels of the pigs receiving the oral iron and the negative control pigs. However, the injectable iron produced significantly improved SI and TIBC values ($P < 0.05$). Total iron binding capacity indicates the amount of iron the serum could bind and the higher the number, the greater the likelihood that the pig is anaemic (4).

Table 1: Serum Iron, Total Iron Binding Capacity and Packed Cell Volume for Experimental Baby pigs.

	Iron Source			SEM
	Oral Iron Fumerate	Injectable Iron dextran	Control	
Serum iron (ug/dl)	27.70 ^a	151.80 ^b	24.8 ^a	0.36
Total iron binding capacity (ug/dl)	660 ^a	363 ^b	662 ^a	0.69
Packed cell volume (%)	19.30 ^a	35.40 ^b	17.6 ^a	0.28
Average daily gain (kg)	0.20 ^a	0.21 ^a	0.20 ^a	0.05

a,b: Means along the same row having different superscripts differ significantly ($P < 0.05$)
SEM: Standard error of means.

The PCV gives an estimation of the number of erythrocytes and amount of haemoglobin (3) and is used to determine if an animal is anaemic. The injectable iron produced a significant increase ($P < 0.05$) in the PCV. There was no significant difference in the PCV of pigs receiving oral iron and the negative control. The results suggest that oral iron products are not as effective as injectable iron in preventing anaemia in baby pigs. It should however be noted that high quality injectable iron treatments are now widely accepted as the most effective method of preventing piglet anaemia and ensuring enough iron for optimum growth and disease resistance (5). Commercial sources of iron in the form of pills or paste can also be given to the piglets individually but these means are not as effective as an iron injection (5).

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