

Iron supplementation of piglets through milk feeders

Results from Nadia Jakobsens M.Sc.
thesis – collaboration project with SEGES

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Iron in milk?

- Iron: If you take an iron supplement, you should not take it together with breakfast if you eat milk products. Foods with calcium reduce the absorption of iron. Instead, you should take iron with foods rich in vitamin C, such as fruit, as vitamin C promotes iron absorption (netdoktor.dk)



Iron and piglets

- Piglets are born with few iron stores
- Need 7 mg a day
- Sow milk contains about 1 mg
- Anemia = low growth
- Therefore in practice - iron injection (200 mg) – normally around day 3

- Over supply - toxic
- Under-supply - anemia

Methods

Pigs from 21 sows were assigned one of three treatments with 98 piglets in each group:

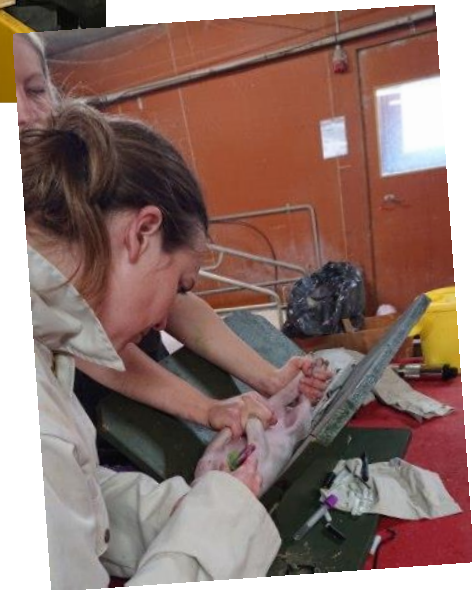
- Group 1 (control - C)
- Group 2 (Injected iron - II). Iron dextran was injected intramuscularly on day 3/4 postpartum
- Group 3 (Milk Iron - MI). Were given milk replacement in cups (DanMilk Supreme, with extra iron (piglet Boozt)) ad libitum from 3-4 days postpartum until weaning and received dry feed ad lib.

All three groups were given dry food from day 6

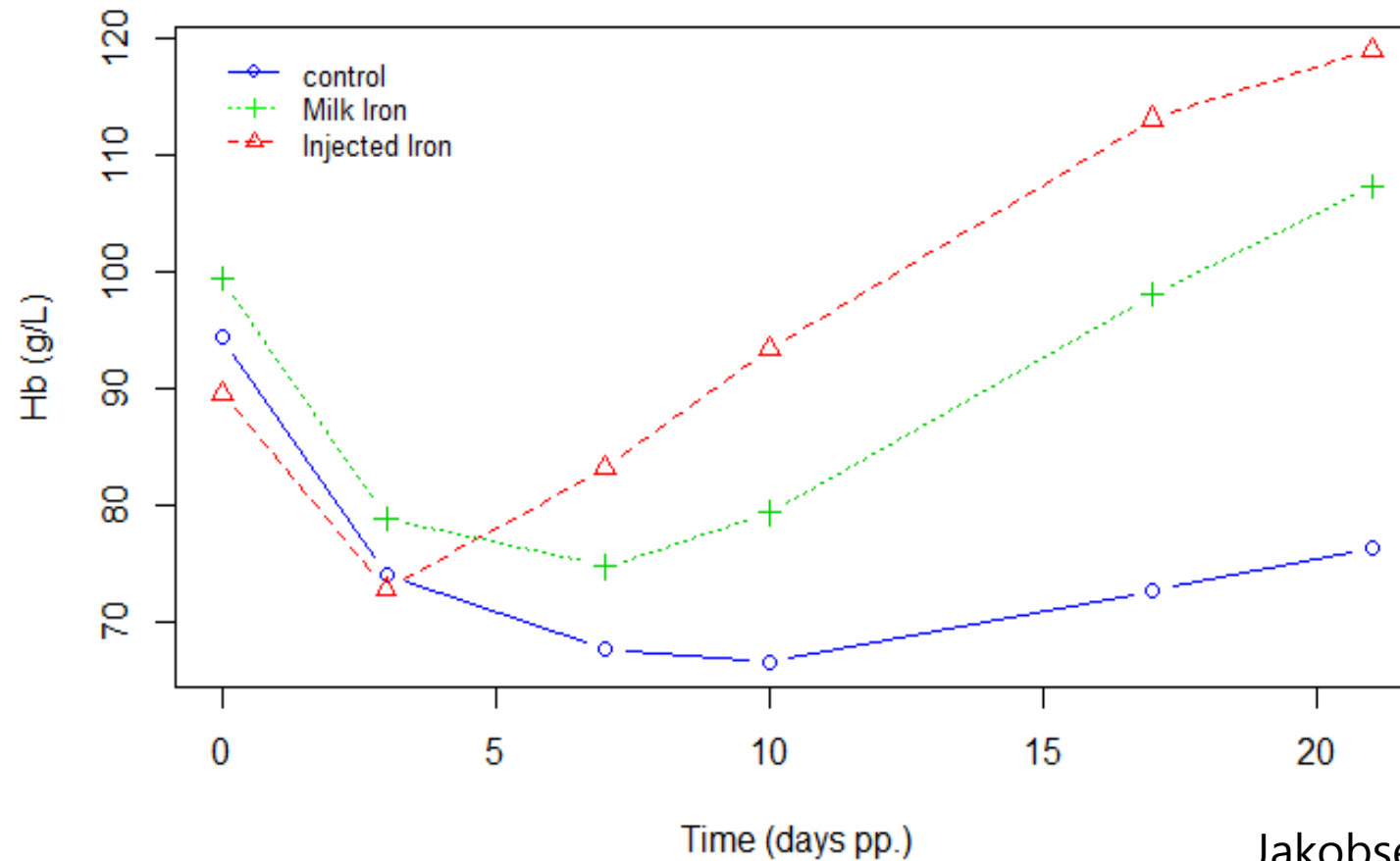
14 pigs per sow – piglets stayed with the same sow

Recordings

- Hemocue: hemoglobin level
- Weight
- Blood sample at d 21
- Video recordings of behavior



Results – The average development in Hb levels from day 0 pp until day 21 for the control group, injected iron group and milk iron group



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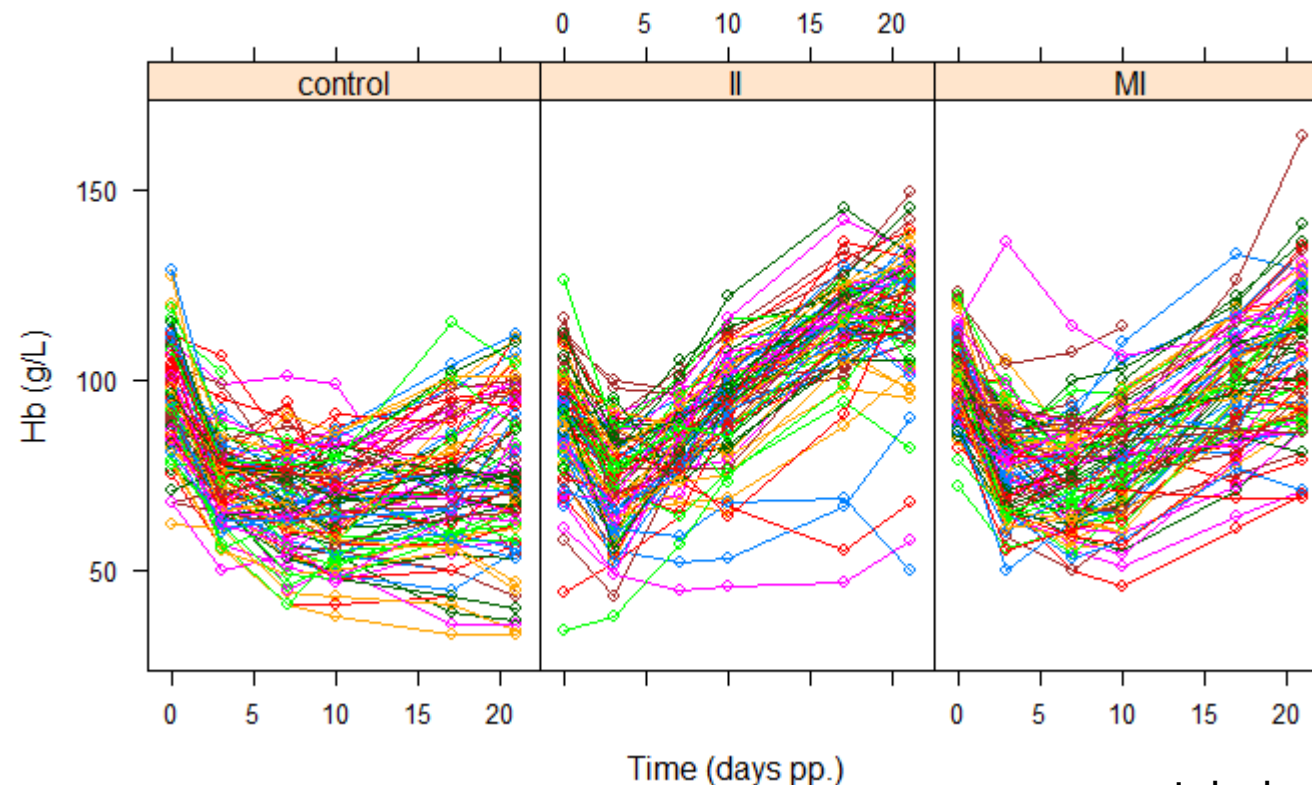
The distribution of normal, iron deficient and anaemic pigs at day 21 pp for the three treatments.

Percentage of pigs that are anaemic, iron deficient or normal at day 21 pp.			
	Treatments		
Item^A	C (n=90)	II (n=84)	MI (n=91)
Anaemic	70 % (63)	4.8 % (4)	15.4 % (14)
Iron deficient	25.6 % (23)	11.9 % (10)	36.3 % (33)
Normal	4.4 % (4)	83.3 % (70)	48.4 % (44)
% w Hb > 90	30 %	95.2 %	84.7 %

^A Anaemic: Hb < 90 g/L, Iron deficient: 90 ≥ Hb < 110 g/L, Normal: Hb ≥ 110 g/L (Bhattarai and Nielsen, 2015b).
Values expressed as percentage (amount).

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Subject profiles of the development in Hb levels from day 0 pp until day 21 for all piglets in the control group, injected iron group (II) and milk iron group (MI)

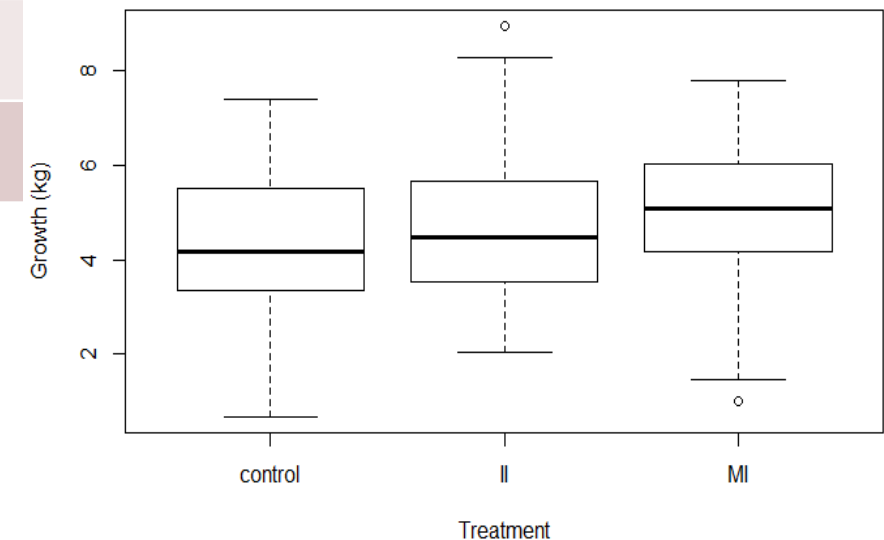


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The growth performance of piglets provided no iron (C), injected iron (II) or iron through milk replacer (MI)

Growth performance of the pigs					
	Treatment				Effect
Item	C	II	MI	SEM	Treatment
Start weight	1.19	1.39	1.28	0.145	0.63
End weight	6.02	6.13	6.10	0.755	0.89
Growth	4.65	4.76	4.74	0.755	0.99

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Take home message

- Iron can be given in milk
- Nadia is also investigating behavior, hematology, correlations between sampling methods etc.
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