



Effectiveness of iron-dextran and gleptoferron (Gleptosil®) on iron serum biochemistry in piglets

D. Sperling², A. Lorencova¹, L. Leva¹, M. Trckova¹, M. Faldyna¹, R. Krejci²

¹ Veterinary Research Institute, Brno, Czech Republic / ² Ceva Sante Animale, Libourne, France

Introduction

Piglets are born with limited iron reserve and they need supplementation by iron in order to synthesize haemoglobin required for the prevention of development of anaemia and for proper immune functions.¹ In majority of studies mainly haemoglobin and haematological profile is measured, parameters describing body iron status are missing.² The aim of the study is to compare the effectiveness of three iron-containing products (two iron-dextran and a gleptoferron) on serum biochemistry connected to iron metabolism.

Materials and methods

Four sows and their litters (SPF status, DanBred) were used in the study. Piglets were randomly divided into four treatment groups and ear-marked for individual identification. Each treatment was then represented in each litter. On day 3, piglets were given intramuscular injection of two different iron-dextran products (group A, B) and group C was treated by gleptoferron product (Gleptosil) according manufactures recommendation. Control group was not treated with any iron. Groups were consisting of 12 piglets. Blood was collected on day 14 and 28 (weaning age). Iron and total iron-binding capacity (TIBC) were determined by colorimetric method on an AU5822 chemistry analyser (Beckman, Olympus). Percentage of Transferrin saturation (TSAT) with iron was calculated according to the following formula: $TSAT = (\text{iron}/\text{TIBC}) \times 100$. All data were subjected to statistical analysis using GraphPadinstant 3.00.

Results

On day 14 and 28 all groups had significantly higher serum iron and TSAT and significantly lower TIBC in comparison with control group. Despite the fact that there were no significant differences among iron-treated groups at weaning (day 28), best results were obtained in group C (Gleptosil). Gleptosil group showed highest Fe concentration in comparison with groups A and B. Transferrin saturation (%) was again most favorable in Gleptosil group in comparison with other groups. TIBC parameter was also the highest in Gleptosil group (all detailed results in the Tab 1).

Discussion

Serum biochemistry and parameters related to iron metabolism are not very frequently evaluated in piglets due to the practical reasons. Fe concentration, TIBC parameter and TSAT parameter could be very useful indicators of potential anaemia and quality of iron supplementation in piglets. In our study all treated groups showed significant difference in mentioned parameters in comparison with control group and piglets injected by gleptoferron (Gleptosil) showed best parameters characterizing body iron status.

References

1. Perri *et al.*, 2015
2. Bhattarai *et al.*, 2014

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Tab. 1. Serum biochemical parameters in piglets

Item	Day	Control	group A (iron-dextran)	group B (iron-dextran)	group C (Gleptosil®)
Fe (µmol/L)	28	3,28 ± 1,14 ^{aA}	17,81 ± 14,95 ^B	13,13 ± 8,99 ^b	18,55 ± 9,34 ^B
TIBC ¹ (µmol/L)	28	183,91 ± 50,03 ^{aA}	89,43 ± 32,13 ^b	89,44 ± 41,62 ^b	76,22 ± 54,04 ^B
Transferrin saturation %	28	1,85 ± 0,66 ^A	26,58 ± 29,50 ^B	18,78 ± 15,66 ^B	36,18 ± 23,29 ^B

a, b; A, B Means with different superscripts were significantly different ($P < 0,05$; $P < 0,01$; Kruskal-Wallis test).

¹ Total iron-binding capacity.