Dietary ractopamine supplementation of pregnant sows: what are the impacts on the neonate?

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***Animal* journal**

Supplementary Table S1 Blood count results of piglets from Ractopamine feeding sows during 25 to 50 days of pregnancy

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Item | Treatments1 | | | SEM | P-value2 | | |
| Control | Rac10 | Rac20 | Treatment | C1 | C2 |
| Number of piglets | 39 | 42 | 42 |  |  |  |  |
| RBC (×106/μL) |  |  |  |  |  |  |  |
| Day 1 | 4.3 | 4.6 | 4.2 | 0.08 | Ns | Ns | Ns |
| Day 7 | 4.0 | 4.1 | 4.1 | 0.06 | Ns | Ns | Ns |
| Day 14 | 5.1 | 5.1 | 5.2 | 0.06 | Ns | Ns | Ns |
| Day 21 | 5.5 | 5.6 | 5.6 | 0.06 | Ns | Ns | Ns |
| Hemoglobin (g/dL) |  |  |  |  |  |  |  |
| Day 1 | 8.3 | 8.8 | 8.2 | 0.14 | Ns | Ns | Ns |
| Day 7 | 8.7 | 8.7 | 8.8 | 0.10 | Ns | Ns | Ns |
| Day 14 | 11.0 | 10.8 | 11.1 | 0.09 | Ns | Ns | Ns |
| Day 21 | 11.2 | 11.3 | 11.2 | 0.08 | Ns | Ns | Ns |
| MCV (fL) |  |  |  |  |  |  |  |
| Day 1 | 63.7 | 63.7 | 64.7 | 0.40 | Ns | Ns | Ns |
| Day 7 | 73.6 | 74.1 | 76.6 | 0.76 | Ns | Ns | Ns |
| Day 14 | 73.0 | 72.9 | 74.9 | 0.68 | Ns | Ns | Ns |
| Day 21 | 67.7 | 67.8 | 68.3 | 0.51 | Ns | Ns | Ns |
| MCH (pg) |  |  |  |  |  |  |  |
| Day 1 | 19.3 | 19.1 | 19.4 | 0.13 | Ns | Ns | Ns |
| Day 7 | 21.9 | 21.5 | 21.7 | 0.22 | Ns | Ns | Ns |
| Day 14 | 21.7 | 21.4 | 21.4 | 0.18 | Ns | Ns | Ns |
| Day 21 | 20.3 | 20.2 | 20.1 | 0.15 | Ns | Ns | Ns |
| Platelets (/μL) |  |  |  |  |  |  |  |
| Day 1 | 417805.6 | 426928.6 | 406555.6 | 11067.69 | Ns | Ns | Ns |
| Day 7 | 901583.3 | 931023.8 | 951522.7 | 19239.70 | Ns | Ns | Ns |
| Day 14 | 711628.6 | 794463.4 | 730066.7 | 20491.20 | Ns | Ns | Ns |
| Day 21 | 705638.9 | 761804.9 | 789590.9 | 22482.29 | Ns | Ns | Ns |

MCV= mean corpuscular volume; MCH= mean corpuscular hemoglobin; RBC= red blood cells

1Control = unsupplemented; Rac10 = 10 mg/kg ractopamine; Rac20 = 20 mg/kg ractopamine.

2Probability values for the effects of the dietary treatment Contrast 1 (C1)= Control × Rac10 + Rac20; Contrast 2 (C2)= Rac10 × Rac20

Ns, not significant

Supplementary Table S2 The white blood cell count results of piglets from Ractopamine feeding sows during 25 to 50 days of pregnancy

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Item (n/μL) | Treatments1 | | | SEM | P-value2 | | |
| Control | Rac10 | Rac20 | Treatment | C1 | C2 |
| Number of piglets | 39 | 42 | 42 |  |  |  |  |
| Leucocytes |  |  |  |  |  |  |  |
| Day 1 | 5900.8 | 5836.7 | 5945.1 | 163.34 | Ns | Ns | Ns |
| Day 7 | 10011.4 | 10194.5 | 10620.1 | 245.28 | Ns | Ns | Ns |
| Day 14 | 8362.6 | 7926.7 | 8360.7 | 217.67 | Ns | Ns | Ns |
| Day 21 | 12277.3 | 11647.8 | 11539.5 | 505.25 | Ns | Ns | Ns |
| Neutrophils |  |  |  |  |  |  |  |
| Day 1 | 3471.6 | 4734.0 | 3720.4 | 268.69 | Ns | Ns | Ns |
| Day 7 | 4399.8 | 5255.7 | 4696.0 | 194.99 | Ns | Ns | Ns |
| Day 14 | 2890.1 | 2730.3 | 3420.8 | 156.02 | Ns | Ns | Ns |
| Day 21 | 6248.7 | 6180.1 | 7104.8 | 566.11 | Ns | Ns | Ns |
| Lymphocytes |  |  |  |  |  |  |  |
| Day 1 | 2054.3 | 2142.2 | 2106.1 | 73.42 | Ns | Ns | Ns |
| Day 7 | 5443.3 | 5109.9 | 5553.7 | 149.12 | Ns | Ns | Ns |
| Day 14 | 5015.4 | 4878.7 | 5086.0 | 138.74 | Ns | Ns | Ns |
| Day 21 | 5630.3 | 5508.5 | 5939.6 | 164.82 | Ns | Ns | Ns |
| Monocytes |  |  |  |  |  |  |  |
| Day 1 | 246.7 | 266.5 | 210.7 | 19.38 | Ns | Ns | Ns |
| Day 7 | 162.4 | 117.1 | 125.6 | 14.95 | Ns | Ns | Ns |
| Day 14 | 172.3 | 177.8 | 178.3 | 18.31 | Ns | Ns | Ns |
| Day 21 | 229.4 | 179.3 | 207.0 | 20.14 | Ns | Ns | Ns |
| Eosinophils |  |  |  |  |  |  |  |
| Day 1 | 28.4 | 33.6 | 49.8 | 5.19 | Ns | Ns | Ns |
| Day 7 | 102.6 | 86.8 | 101.2 | 11.11 | \* | Ns | \* |
| Day 14 | 126.2 | 104.4 | 95.7 | 13.40 | Ns | Ns | Ns |
| Day 21 | 148.1 | 137.9 | 154.6 | 17.66 | Ns | Ns | Ns |
| Basophiles |  |  |  |  |  |  |  |
| Day 1 | 21.9 | 16.3 | 14.6 | 2.91 | Ns | Ns | Ns |
| Day 7 | 30.6 | 22.8 | 14.8 | 4.39 | Ns | Ns | Ns |
| Day 14 | 12.8 | 20.8 | 8.3 | 2.95 | Ns | Ns | Ns |
| Day 21 | 4.7 | 5.3 | 8.8 | 2.12 | Ns | Ns | Ns |

1Control = unsupplemented; Rac10 = 10 mg/kg ractopamine; Rac20 = 20 mg/kg ractopamine.

2Probability values for the effects of the dietary treatment Contrast 1 (C1)= Control × Rac10 + Rac20; Contrast 2 (C2)= Rac10 × Rac20

Ns, not significant; \*P < 0.05

Supplementary Table S3 Serum biochemistry results of piglets from Ractopamine feeding sows during 25 to 50 days of pregnancy

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Item (mg/ dL) | Treatments1 | | | SEM | P-value2 | | |
| Control | Rac10 | Rac20 | Treatment | C1 | C2 |
| Number of piglets | 39 | 42 | 42 |  |  |  |  |
| Urea |  |  |  |  |  |  |  |
| Day 1 | 31.8 | 38.5 | 33.0 | 1.59 | Ns | Ns | Ns |
| Day 7 | 17.9 | 15.8 | 15.7 | 0.52 | Ns | Ns | Ns |
| Day 14 | 15.7 | 16.6 | 16.0 | 0.64 | Ns | Ns | Ns |
| Day 21 | 15.0 | 13.8 | 15.0 | 0.50 | Ns | Ns | Ns |
| Total Protein |  |  |  |  |  |  |  |
| Day 1 | 6.1 | 6.5 | 6.3 | 0.11 | Ns | Ns | Ns |
| Day 7 | 5.7 | 5.9 | 6.1 | 0.08 | Ns | Ns | Ns |
| Day 14 | 5.5 | 5.4 | 5.5 | 0.06 | Ns | Ns | Ns |
| Day 21 | 5.1 | 5.2 | 5.4 | 0.06 | Ns | Ns | Ns |
| Creatinine |  |  |  |  |  |  |  |
| Day 1 | 0.5 | 0.6 | 0.6 | 0.01 | Ns | Ns | Ns |
| Day 7 | 0.6 | 0.6 | 0.6 | 0.01 | Ns | Ns | Ns |
| Day 14 | 0.8 | 0.7 | 0.7 | 0.01 | Ns | Ns | Ns |
| Day 21 | 0.8 | 0.8 | 0.8 | 0.01 | Ns | Ns | Ns |
| Cholesterol |  |  |  |  |  |  |  |
| Day 1 | 97.9 | 113.2 | 106.7 | 3.22 | Ns | Ns | Ns |
| Day 7 | 138.0 | 152.5 | 154.8 | 2.99 | Ns | Ns | Ns |
| Day 14 | 173.2 | 164.5 | 153.8 | 4.18 | Ns | Ns | Ns |
| Day 21 | 144.6 | 143.9 | 162.1 | 5.14 | Ns | Ns | Ns |
| Triglycerides |  |  |  |  |  |  |  |
| Day 1 | 160.6 | 150.4 | 185.0 | 9.52 | Ns | Ns | Ns |
| Day 7 | 119.8 | 117.9 | 139.6 | 4.18 | Ns | Ns | Ns |
| Day 14 | 96.7 | 92.7 | 107.7 | 3.65 | Ns | Ns | Ns |
| Day 21 | 74.4 | 69.3 | 92.5 | 2.84 | Ns | Ns | Ns |
| HDL |  |  |  |  |  |  |  |
| Day 1 | 32.3 | 33.7 | 33.2 | 0.81 | Ns | Ns | Ns |
| Day 7 | 56.3 | 57.7 | 58.1 | 0.92 | Ns | Ns | Ns |
| Day 14 | 64.2 | 60.9 | 56.9 | 1.08 | Ns | Ns | Ns |
| Day 21 | 49.6 | 48.2 | 52.7 | 1.01 | Ns | Ns | Ns |
| VLDL |  |  |  |  |  |  |  |
| Day 1 | 32.1 | 30.1 | 36.7 | 1.89 | Ns | Ns | Ns |
| Day 7 | 24.0 | 23.5 | 27.9 | 0.83 | Ns | Ns | Ns |
| Day 14 | 19.3 | 18.6 | 22.2 | 0.72 | Ns | Ns | Ns |
| Day 21 | 14.9 | 13.9 | 18.5 | 0.57 | \* | Ns | \* |
| LDL |  |  |  |  |  |  |  |
| Day 1 | 34.6 | 48.3 | 38.5 | 2.87 | Ns | Ns | Ns |
| Day 7 | 61.5 | 70.5 | 68.7 | 2.91 | Ns | Ns | Ns |
| Day 14 | 89.6 | 86.1 | 81.1 | 4.03 | Ns | Ns | Ns |
| Day 21 | 79.2 | 81.8 | 91.5 | 4.67 | Ns | Ns | Ns |
| Glycose |  |  |  |  |  |  |  |
| Day 1 | 103.1 | 104.9 | 104.4 | 1.93 | Ns | Ns | Ns |
| Day 7 | 127.0 | 126.9 | 130.3 | 1.48 | Ns | Ns | Ns |
| Day 14 | 136.2 | 132.1 | 136.0 | 1.67 | Ns | Ns | Ns |
| Day 21 | 119.3 | 120.5 | 121.7 | 1.80 | Ns | Ns | Ns |

HDL = high-density lipoproteins; VLDL = very-low-density lipoproteins; LDL = low-density lipoproteins

1Control = unsupplemented; Rac10 = 10 mg/kg ractopamine; Rac20 = 20 mg/kg ractopamine.

2Probability values for the effects of the dietary treatment Contrast 1 (C1)= Control × Rac10 + Rac20; Contrast 2 (C2)= Rac10 × Rac20

Ns, not significant; \*P < 0.05

Supplementary Table S4 Time effects of Complete blood count and Serum biochemistry results of piglets from Ractopamine feeding sows during 25 to 50 days of pregnancy

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Item (n/μL) | Days | | | | SEM | P-value |
| 1 | 7 | 14 | 21 | Time |
| RBC (×106/μL) | 4.36a | 4.07b | 5.11c | 5.58d | 0.04 | \*\*\* |
| Hemoglobin (g/dL) | 8.43a | 8.73a | 10.95b | 11.25b | 0.08 | \*\*\* |
| MCV (fL) | 64.07a | 74.88b | 73.67b | 67.95c | 0.36 | \*\*\* |
| MCH (pg) | 19.28a | 21.71b | 21.48b | 20.19c | 0.10 | \*\*\* |
| Platelets (n/μL) | 416804.88a | 929729.51b | 746553.72c | 755198.35c | 12605.82 | \*\*\* |
| White blood cell count (n/μL) | | | | | | |
| Leucocytes | 5896.66a | 10302.50b | 8210.42c | 11801.25b | 186.25 | \*\*\* |
| Neutrophils | 3993.67a | 4800.44b | 3034.54a | 6541.41b | 178.08 | \*\*\* |
| Lymphocytes | 2103.28a | 5369.82bc | 4995.18b | 5703.44c | 93.90 | \*\*\* |
| Monocytes | 240.29 | 133.61 | 176.36 | 204.28 | 9.32 | Ns |
| Eosinophils | 38.36 | 96.36 | 107.51 | 147.16 | 6.60 | Ns |
| Basophiles | 17.34 | 22.13 | 13.88 | 6.45 | 1.62 | Ns |
| Serum biochemistry, (mg/ dL) | | | | | | |
| Urea | 34.51a | 16.38b | 16.10b | 14.60b | 0.59 | \*\*\* |
| Creatinine | 0.56a | 0.60a | 0.74b | 0.80c | 0.01 | \*\*\* |
| Total Protein | 6.30a | 5.90b | 5.50c | 5.25d | 0.04 | \*\*\* |
| Cholesterol | 106.35a | 149.18b | 163.18b | 150.81b | 2.21 | \*\*\* |
| Triglycerides | 166.06a | 126.43ab | 99.42bc | 79.34c | 3.20 | \* |
| HDL | 33.09a | 57.48b | 60.40c | 50.25d | 0.68 | \*\*\* |
| VLDL | 33.08a | 25.29a | 20.11b | 15.89c | 0.64 | \*\*\* |
| LDL | 40.78a | 67.23b | 85.30b | 84.63b | 2.02 | \*\*\* |
| Glycose | 104.16a | 128.20b | 134.73b | 120.59c | 1.01 | \*\*\* |

MCV= mean corpuscular volume; MCH= mean corpuscular hemoglobin; RBC= red blood cells; HDL = high-density lipoproteins; VLDL = very-low-density lipoproteins; LDL = low-density lipoproteins

a,b,c,d Means with different letters, within a row, are statistically different, P < 0.05

Ns, not significant, \*P < 0.05, \*\*\*P < 0.001