A. K. Novais , Y. Martel-Kennes, C. Roy, K. Deschêne, S. Beaulieu, N. Bergeron, J-P. Laforest, M. Lessard, J. J. Matte and J. Lapointe. Tissue-specific profiling reveals modulation of cellular and mitochondrial oxidative stress in normal and low birth weight piglets throughout the peri-weaning period. ***Animal***.

**Supplementary Table S1***Analysis of variance (main effects and interaction) for all measured parameters in plasma, liver, intestinal mucosa and kidney of piglets (P-values).*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Birthweight** | **Age** | **Birthweight x Age** |
| **Plasma**  |  |  |  |
| GPx  | 0.2591 | <0.0001a | 0.3263 |
| SOD  | 0.4992 | <0.0001a | 0.1234 |
| 8-OHdG | 0.0415a | 0.0175a | 0.0725b |
| Carbonyls | 0.4257 | 0.3330 | 0.8626 |
| **Liver** |  |  |  |
| ATP | 0.0919b | 0.0139a | 0.4574 |
| Carbonyls | 0.0448a | <0.0001a | 0.0701 |
| GPx  | 0.7816 | 0.0007a | 0.8552 |
| GPx mito. | 0.6667 | 0.4597 | 0.9641 |
| SOD  | 0.9283 | 0.4190 | 0.3275 |
| SOD mito. | 0.1522 | 0.0383a | 0.3046 |
| **Intestinal mucosa** |  |  |  |
| GPx  | 0.7432 | <0.0001a | 0.2645 |
| GPx mito. | 0.2887 | 0.0076a | 0.3988 |
| SOD  | 0.4526 | 0.0007a | 0.4264 |
| SOD mito. | 0.3661 | 0.0004a | 0.3674 |
| **Kidney** |  |  |  |
| GPx  | 0.1834 | <0.0001a | 0.3541 |
| GPx mito. | 0.4720 | 0.0025a | 0.9974 |
| SOD  | 0.4878 | 0.0008a | 0.7736 |
| SOD mito. | 0.8910 | 0.0006a | 0.7344 |

GPx, Glutathione peroxidase activity; GPx mito., Glutathione peroxidase activity in mitochondria; SOD, Superoxide dismutase activity; SOD mito., Superoxide dismutase activity in mitochondria; 8-OHdG, 8-hydroxy-2'-deoxyguanosine; ATP, adenosine 5’ triphosphate.

a Significant effect is observed at *P* < 0.05.

b Tendency to differ is observed at *P* < 0.10

**Supplementary Table S2***Group effect (LBW vs NBW) within age for all measured parameters in plasma, liver, intestinal mucosa and kidney of piglets (P-values).*

|  |  |
| --- | --- |
|  | **Age (days)** |
|  | **14** | **21** | **22** | **23** | **25** | **29** | **35** |
| **Plasma**  |  |  |  |  |  |  |  |
| GPx  | 0.3044 | 0.2792 | 0.3723 | 0.7875 | 0.1567 | 0.9464 | 0.0781b |
| SOD  | 0.0227a | 0.1630 | 0.9523 | 0.4814 | 0.2432 | 0.7698 | 0.2260 |
| 8-OHdG | 0.7173 | 0.9718 | 0.0716b | 0.0546b | 0.0081a | 0.2003 | 0.9027 |
| Carbonyls | 0.4058 | 0.6988 | 0.4472 | 0.9261 | 0.9353 | 0.1972 | 0.8431 |
| **Liver** |  |  |  |  |  |  |  |
| ATP | 0.0967 | 0.0406a | - | 0.9592 | 0.8964 | 0.8552 | 0.5505 |
| Carbonyls | 0.0063a | 0.0286a | - | 0.2667 | 0.7248 | 0.7371 | 0.7933 |
| GPx  | 0.4871 | 0.6648 | - | 0.2277 | 0.6279 | 0.0271a | 0.3787 |
| GPx mito. | 0.6894 | 0.0517b | - | 0.6871 | 0.6807 | 0.8156 | 0.2112 |
| SOD  | 0.3341 | 0.5315 | - | 0.6912 | 0.9178 | 0.0327a | 0.7617 |
| SOD mito. | 0.3675 | 0.9294 | - | 0.6181 | 0.1358 | 0.5882 | 0.1373 |
| **Intestinal mucosa** |  |  |  |  |  |  |  |
| GPx  | 0.9935 | 0.4267 | - | 0.1068 | 0.4689 | 0.3101 | 0.1805 |
| GPx mito. | 0.1314 | 0.8732 | - | 0.5979 | 0.2021 | 0.2112 | 0.4871 |
| SOD  | 0.1920 | 0.8785 | - | 0.3837 | 0.1430 | 0.4784 | 0.5656 |
| SOD mito. | 0.3319 | 0.6151 | - | 0.0446a | 0.3836 | 0.8089 | 0.6589 |
| **Kidney** |  |  |  |  |  |  |  |
| GPx  | 0.7580 | 0.3247 | - | 0.3326 | 0.0904b | 0.8212 | 0.6114 |
| GPx mito. | 0.9107 | 0.6144 | - | 0.8501 | 0.5185 | 0.7449 | 0.9895 |
| SOD  | 0.2290 | 0.3270 | - | 0.6930 | 0.7143 | 0.7895 | 0.6539 |
| SOD mito. | 0.2776 | 0.3688 | - | 0.9686 | 0.6101 | 0.9227 | 0.4747 |

LBW, Low birth weight piglets; NBW, Normal birth weight piglets; GPx, Glutathione peroxidase activity; GPx mito., Glutathione peroxidase activity in mitochondria; SOD, Superoxide dismutase activity; SOD mito., Superoxide dismutase activity in mitochondria; 8-OHdG, 8-hydroxy-2'-deoxyguanosine; ATP, adenosine 5’ triphosphate.

a Values from both groups differ significantly at *P* < 0.05. b Values from both groups tend to differ at *P* < 0.10

**Supplementary Table S3** *Multiple comparisons with a Tukey's adjustment for age for all measured parameters in plasma, liver, intestinal mucosa and kidney of piglets.*

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Age (days)** |  |
|  | **14** | **21** | **22** | **23** | **25** | **29** | **35** | **sem** |
|  |  |  |  |  |  |  |  |  |
| **Plasma**  |  |  |  |  |  |  |  |  |
| GPx (mU/mg)  | 18.1a | 18.1a | 20.4a | 21.7a | 24.6a | 24.7ab | 29.7b | 0.9 |
| SOD (mU/mg) | 142.1a | 108.4a | 115.2a | 132.1ab | 164.3ac | 214.4bc | 202.7c | 12.1 |
| 8-OHdG (pg/ml) | 12.9ab | 11.2a | 15.9b | 13.2ab | 12.3ab | 11.9ab | 11.9ab | 0.9 |
| Carb. (nmol/mg) | 4.99 | 4.66 | 4.82 | 4.55 | 4.79 | 5.31 | 5.25 | 0.27 |
| **Liver** |  |  |  |  |  |  |  |  |
| ATP (nmol/mg) | 4.45a | 4.13ab | - | 2.36b | 2.73ab | 2.89ab | 3.42ab | 0.58 |
| Carb. (nmol/mg) | 1.28a | 1.09ab | - | 1.04ab | 0.97b | 0.91b | 0.94b | 0.07 |
| GPx (mU/mg) | 166.2a | 212.3bc | - | 178.3b | 198.2bc | 194.2abc | 196.1c | 8.8 |
| GPx m. (mU/mg) | 117.1 | 123.1 | - | 120.9 | 130.1 | 129.6 | 120.2 | 6.4 |
| SOD (mU/mg) | 32.2 | 35.1 | - | 36.2 | 37.8 | 36.2 | 33.6 | 2.1 |
| SOD m. (mU/mg) | 10.5ab | 10.3ab | - | 11.2b | 11.2b | 10.5ab | 9.5a | 0.4 |
| **Int. mucosa** |  |  |  |  |  |  |  |  |
| GPx (mU/mg) | 26.1a | 30.9a | - | 32.4a | 28.3a | 29.1a | 45.9b | 2.7 |
| GPx m. (mU/mg) | 35.4ab | 33.2b | - | 31.9b | 36.4b | 38.1b | 43.8b | 2.3 |
| SOD (mU/mg) | 9.3a | 9.9ab | - | 11.8c | 11.1bc | 10.7abc | 9.9ab | 0.4 |
| SOD m. (mU/mg) | 5.2a | 5.3a | - | 3.8b | 4.2ab | 4.2ab | 3.9b | 0.3 |
| **Kidney** |  |  |  |  |  |  |  |  |
| GPx (mU/mg) | 90.1a | 121.3b | - | 127.8b | 125.9b | 118.2b | 130.5b | 5.6 |
| GPx m. (mU/mg) | 71.6a | 87.4b | - | 86.6b | 87.5b | 84.1ab | 92.9b | 3.6 |
| SOD (mU/mg) | 37.8a | 44.5ab | - | 43.8ab | 47.6b | 43.3ab | 48.3b | 1.8 |
| SOD m. (mU/mg) | 11.2a | 13.1b | - | 14.2b | 14.5b | 14.6ab | 15.4b | 0.7 |

GPx, Glutathione peroxidase activity; GPx m., Glutathione peroxidase activity in mitochondria; SOD, Superoxide dismutase activity; SOD m., Superoxide dismutase activity in mitochondria; 8-OHdG, 8-hydroxy-2'-deoxyguanosine; Carb., protein carbonyls; ATP, adenosine 5’ triphosphate.

abc LS- means with different superscript differ significantly at *P* < 0.05.