Blood antioxidant enzymes (SOD, GPX), biochemical and haematological parameters in pigs naturally infected with porcine reproductive and respiratory syndrome virus

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Abstract

Porcine reproductive and respiratory syndrome (PRRS) has become one of the most economically important diseases for the swine industry worldwide. The objective of the study was to determine selected blood antioxidant enzymes (glutathione peroxidase (GPX), superoxide dismutase (SOD)), biochemical and haematological parameters in PRRS positive and negative pigs of three different categories, mainly to test oxidative stress hypothesis in pigs naturally infected with PRRS virus. Ninety PRRS positive and 90 PRRS negative pigs were included in the study. The presence of PRRS was confirmed by serological detection of antibodies against PRRS virus (PRRSV) and detection of PRRS viral RNA by RT-PCR. Pigs were further divided into three groups of 30: piglets just before weaning (weaners), fatteners and finishers. Blood samples for determining selected blood parameters were collected from the vena cava cranialis. Significantly (P < 0.05) higher activities of SOD in weaners and fatteners and of GPX in weaners were determined in PRRS positive pigs than in corresponding groups of PRRS negative pigs. In contrast, significantly (P < 0.05) lower GPX activity was observed in finishers of PRRS positive pigs than in the corresponding group of PRRS negative pigs. Concentrations of serum total protein in PRRS positive weaners and fatteners were significantly (P < 0.05) higher than those found in PRRS negative pigs. Leukopenia was observed in all three groups of PRRS positive pigs. It has been demonstrated, for the first time, that oxidative stress might be increased in PRRSV naturally infected pigs, especially in weaners.

Key words: pig, porcine reproductive and respiratory syndrome, blood antioxidant enzymes (SOD, GPX), biochemistry, haematology

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