

BIOLOGICAL MARKERS ASSOCIATED WITH ROBUSTNESS OF PIGLETS AT WEANING

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Introduction

The robustness of piglets at weaning can be seen as ability to express optimal growth performances without health problems whatever weaning conditions. In this study, we approached piglet robustness at weaning through growth performances after weaning. The aim was to identify biological markers measured around weaning associated with this growth.

Materials and Methods

Piglets (n=288) weaned at 28 days of age were selected from 16 commercial farms with contrasted health statuses (deteriorated: SAN- or good: SAN+). Blood variables (n=62) describing immunity, stress, oxidative status and metabolism were measured at 26 and 33 days of age. The relative ADG (rADG, ADG between 26 and 47 days of age divided by live weight at 26 days) was chosen as the performance indicator. Piglets were then classified according to the median of their farm in classes of low (rADG-) or high (rADG+) rADG.

Results

The health status of the farm was significantly associated with 37 of 67 variables measured ($P<0.05$). The rADG was associated with 26 variables, and a predictive model of rADG based on linear regression kept (i) the number of monocytes and lymphocytes at 26 days (ii) the blood concentration of vitamin A, non-esterified fatty acids, creatinine and immunoglobulin M and the number of neutrophils at 33 days of age ($P<0.05$). Thus, piglets reared on SAN- farms exhibited higher activation of the immune system, mobilization of body reserves and oxidative stress after weaning than SAN+ piglets. Independent of the effect of health status, rADG+ piglets exhibited

lower mobilization of body reserves and higher antioxidant reserves after weaning than rADGpiglets.

Discussion and conclusion

Finally, based on the weight of a piglet before weaning and on biological variables measured before or 5 days after weaning, it is possible to estimate its weight at 47 days of age ($r^2 = 0.72$).