

Effects of Birth Weight on Colostrum Intake, Mortality Rate, and Growth Rate of Thai Native Piglets

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Abstract

The objective of this study was to determine the influence of birth weight on colostrum intake, growth performance, and survival of the piglets during lactation. The colostrum and milk from 18 Thai native (TN) and 17 crossbred (CB, Large white x Landrace) pigs were determined to quality and immunity, and their piglets (184 piglets of TN and 229 piglets of CB) were the growth performance, average daily gain (ADG), and mortality during lactation. Piglets were weighted at birth, 24 hours, and then 7, 14, and 21 days of age. Blood from piglets was collected at 12 and 24 hours after farrowing. Colostrum and milk from sows were collected at 0, 6, 12, 24, 48, and 72 hours, and were used to analysis for total solid, crude protein (CP), ash, lactose, crude fat (CF), and IgG concentration. IgG concentration in colostrum and serum was measured by ELISA. Colostrum intake of piglets was calculated by birth weight, time from birth to first sucking, and time of colostrum intake during 24 hours after birth. Results showed that birth weight of TN (0.65 ± 0.15 kg) piglets was lower significantly different than CB piglets (1.43 ± 0.20 kg) ($P<0.01$), and ADG of TN piglets at 7, 14, and 21 days (69.33 ± 23.05 ; 78.07 ± 39.05 ; and 79.98 ± 25.08 g/day, respectively) were also lower significantly different than CB piglets (167.67 ± 34.81 ; 151.46 ± 49.67 ; and 173.30 ± 60.85 g/day, respectively) ($P<0.01$). The mortality rate during 0 to 24 hours after farrowing of CB piglets was lower than TN (3.38 % and 5.70 %, respectively). In contrast, mortality rate during 24 hours to 3 days after farrowing of CB (6.51 %) piglets were higher significantly different than TN (1.11 %) piglets ($P<0.01$). For colostrum intake within all groups of CB piglets (colostrum intake of high birth weight (CIHBW), colostrum intake of medium birth weight (CIMBW), and colostrum intake of low birth weight (CILBW) was higher significantly different than all groups of TN piglets (348.39; 349.23; and 334.44 g/kg and 186.83; 166.46; and 149.98 g/kg; respectively) ($P<0.01$). For the colostrum intake within all groups of TN piglets, the CIHBW (186.83g/kg) was higher significantly different colostrum intake than CIMBW and CILBW (166.46; and 149.98 g/kg) group ($P<0.01$). The composition and quality of all two breed: CP, lactose, and ash concentration were not significantly different by breed. However, CP and lactose concentration were significantly different by over time within the breed ($P<0.01$). The CF concentration of CB was higher significantly different than TN at 48 and 72 hours ($P<0.05$), it was also significantly different within the same breed when the over time ($P<0.01$). The total solids of CB (26.83 %) was significantly higher than TN (23.91 %) at 0 hour ($P<0.01$), but the IgG concentration in colostrum of TN was significantly higher different than CB at 24 and 48 hours (95.75, 66.97 and 70.79, 32.96 mg/ml, respectively) ($P<0.01$), and TN (32.50 mg/ml) was also significantly higher than CB (20.56 mg/ml) at 72 hours ($P<0.05$), and the IgG concentration in

serum was not significantly different by breed ($P>0.05$). At the first 12 hours after farrowing, IgG of TN was 16.98 ± 2.98 mg/ml, and 15.28 ± 3.33 mg/ml of CB, and at the 24 hours of all breed was 21.32 ± 3.29 mg/ml of TN and 20.06 ± 3.73 mg/ml of CB. Correlation between growth performance of piglets, composition, quality of colostrum, and milk was not significantly different ($P>0.05$). These results showed that the growth performance of the piglets was affected by breed. For the composition and quality of colostrum and milk of TN, and CB had significantly different within over time after farrowing.