VARIA TION IN THE IMMUNE RESPONSIVENESS OF THREE PIG BREEDS IN VIETNAM

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Genetic variation in disease resistance to viral, bacterial or parasitic infections has been identified in a number of domestic animal species (Gavora and Spencer 1983). The variation in resistance has been demonstrated both between breeds and also within breed (Mallard et al. 1992; Joling et al. 1993) but as yet the relative importance of each has not been quantified. The utilisation of this variation in resistance to improved disease resistance in herds relies on the identification of selection criteria which can be used to screen breeding populations. Edfors-Lilja et al. (1994) have suggested that 1 possible criterion could be to select on immune responsiveness and the present study was designed to examine differences in immune responsiveness of 3 pig breeds commonly used in Vietnam, the indigenous breed representing a disease-resistant type.

Three of the most popular pig breeds in Vietnam: Mong Cai (indigenous breed), Large White and Landrace (exotic breeds) were used. A total of 105 piglets from the three breeds were placed in the same rearing shed and on the same diet after weaning at 8 weeks of age. Cellular and humoral immune reaction to antigens were tested. Antibody responses to injections of keyhole lympet haemocyanin (KLH) and ovalbumin at 10 weeks were measured using ELISA techniques at 7, 14, 21 and 35 days post injection. Reactions to phytohemagglutinine (PHA) and dinitrochlorobenzene (DNCB) were monitored by skin tests (double skin fold thickness) with dermal injections being given prior to vaccination at 10 weeks of age. White blood cell counts (WBC) were also measured at this time.

There were significant differences between breeds in all of the antibody responses measured (P<0.01). Antibody response was highest at 14 days after immunisation with antibodies titres (log2) being 11.5, 9.6 and 8.9 respectively for Mong Cai, Large White and Landrace. Skin thickness was measured at 0, 24, 48, 72 hours after immunisation with a maximum thickness measured at 24 hours. Again the Mong Cai breed showed the greatest reaction (0.81mm a 32.0% increase, P<0.05) followed by Landrace (0.62mm a 21.3% increase) and Large White (0.59mm a 19.5% increase) respectively. The number of leucocytes in the blood of the piglets at 10 weeks of age was also found to be significantly different (P<0.05) between the 3 breeds. Total WBC counts were 23.03 0.8, 20.06 0.6 and 19.43 0.5 for Mong Cai, Large White and Landrace, respectively.

Significant differences in the immune responsiveness of the 3 breeds used in this study suggest that further breed comparison studies are necessary to determine if the difference in immune response is also reflected in disease resistance. It would seem that the indigenous breed was consistently the most responsive in all measures of immune response which would support a concept of a ‘disease resistant’ breed relative to the 2 exotic breeds which have been traditionally selected for growth traits in a relatively disease ‘neutral’ environment.


