THE SELENIUM STATUS AND RELATIONSHIPS BETWEEN BLOOD AND TISSUE SELENIUM CONCENTRATIONS IN COMMERCIALLY PRODUCED PIGS IN SOUTH AUSTRALIA

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Selenium (Se) deficiency in pigs has been associated with a number of disorders including mulberry heart disease, hepatosis dietetica and nutritional myopathy (van Vleet 1989). The present study was conducted to determine the Se status and relationships between Se concentrations in blood and tissues in pigs in South Australia.

Samples of venous blood were obtained from 90 baconer pigs and samples of whole kidney and liver from 45 of these pigs. The pigs were from 14 properties and were slaughtered at four major abattoirs. Selenium concentrations were determined as described by Koh and Benson (1982).

Whole blood and liver Se concentrations in Table 1 indicate that pigs sampled in this study were of adequate status. Rammell *et al.* (1988) suggested that Se concentrations greater than 2.2 umol/kg liver dry matter (DM) and 1.5 umol/l blood were indicative of Se adequacy in pigs.

Table 1 Mean concentrations and ranges for Se in the blood (umol/l) and tissues (umol/kg DM) of pigs

Blood/Tissue	n	Mean	Range
Plasma	90	2.06	1.18 - 3.02
Blood	90	2.70	1.46 - 3.02
Blood cells	90	3.70	1.70 - 6.80
Liver	45	21.30	15.90 - 27.30
Kidney cortex	45	101.00	78.00 - 139.00
Kidney medulla	45	18.60	6.10 - 30.50

n= no. of pigs sampled.

The Se concentration in whole blood was linearly related to that in both blood cells (r^2=0.72) and plasma (r^2=0.21). There was no significant correlation (P>0.05) between the Se concentration in whole blood *or* plasma with any of the tissue concentrations. The concentration of Se in the liver was less than that in the kidney cortex but greater than that in the kidney medulla (P<0.001).

Kidney samples are used to assess the Se status of pigs but this study shows that these values can be misleading. There was a marked difference between the Se concentrations in the medulla and cortex (see Table 1). It would be more accurate to assay the cortex rather than the whole kidney because of the difficulty of obtaining a sample of kidney containing the correct proportions of medulla and cortex.

KOH, T.S. and BENSON, T.H. (1982). J.Assoc. Off. Anal.Chem. 66:918.
RAMMELL, C.G., PEARSON, A.B. and BENTLEY, G.R. (1988), N.Z. Vet. J. 36: 133.
VAN VLEET, J.F. and KENNEDY, S. (1989). Compendium Cont. Educ. Pract. Vet. 11:662.

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