

VITAMIN B STATUS OF COMMERCIALY-PRODUCED  
PIGS IN SOUTH AUSTRALIA

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Vitamin E deficiency in pigs has been associated with a number of disorders including mulberry heart disease, hepatosis dietetica and nutritional myopathy (van Vleet and Kennedy 1989). The purpose of our study was to survey the vitamin E status of pigs produced commercially in South Australia.

Samples of venous blood were obtained from 90 baconer pigs and samples of liver from 45 of these pigs. The pigs were from 14 properties and were slaughtered at four major abattoirs. Alpha-tocopherol concentrations in plasma and liver were determined by high pressure liquid chromatography with fluorescence detection.

The mean concentrations of alpha-tocopherol varied from 0.59 to 1.83 mg/l plasma and from 1.95 to 8.79 mg/kg liver (wet weight) (Table 1). Rammell et al. (1988) suggested that vitamin E concentrations higher than 1.1 mg/l plasma and 4.3 mg/kg liver (wet weight) were adequate for pigs, with concentrations of less than 0.4 mg/l plasma and 1.1 mg/kg liver indicating vitamin E deficiency. Intermediate values may indicate deficiency, depending on the tissue concentrations of other constituents particularly selenium and polyunsaturated fatty acids (Rammell et al. 1988; van Vleet and Kennedy 1989). In our study, pigs at four piggeries (Nos. 10, 11, 12 and 14) had a low vitamin E status but they were unlikely to be at risk to vitamin E deficiency because the selenium concentrations in these pigs were adequate (Langston 1990).

Table 1 Mean concentrations, with standard deviations, of alpha-tocopherol in plasma (mg/l) and liver (mg/kg wet weight) of pigs from different piggeries

Piggery:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Plasma														
Mean	1.46	1.47	1.72	1.40	1.18	1.35	1.37	1.83	1.24	0.90	0.92	0.72	1.55	0.59
s.d.	0.45	0.41	0.20	0.27	0.36	0.18	0.15	0.25	0.23	0.46	0.20	0.09	0.41	0.19
Liver														
Mean	4.53		4.65		4.70		8.79		2.54		2.78		1.95	
s.d.	1.12		1.15		0.31		1.54		1.22		0.44		0.41	
No. pigs sampled														
	8	6	7	5	9	4	6	10	10	5	5	5	5	5

Liver and plasma alpha-tocopherol concentrations were highly correlated ( $r = 0.821$ ) with a mean ( $\pm$ s.d.) liver:plasma ratio of  $3.5(\pm 0.8)$ . This ratio is similar to that reported for pigs in other countries (see Rammell et al. 1988). These results suggest that plasma alpha-tocopherol concentrations were of diagnostic value in providing a guide to the alpha-tocopherol reserves in the liver of pigs.

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