

NUTRITIVE VALUE OF BARLEY FOR PIGS

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Barley is the major feed grain for pigs in southern Australia. The contents of digestible energy (DE) and lysine (DL) are the two most important indices of its nutritive value. However, these parameters are not easily measured and their mean values and variation among barley samples is important in practical diet formulation. Batterham et al. (1980) found little variation in DE content among barley cultivars (mean 14.3, range 13.9 to 14.5 MJ/kg DM); DL was not measured but total lysine varied considerably (3.0 to 4.5 g/kg DM). The present experiment was undertaken to measure the variation in amino acid digestibility and DE content among five marketing grades of barley.

Five pigs were prepared with a simple cannula in the terminal ileum and each given five barley diets. Diets contained 96.8% barley and supplements of vitamins, minerals and Cr₂O₃ marker were added. The barley grades and their cultivars were malting grades Nos. 1 (Clipper) and 2 (Weeah), 2-row feed grades Nos. 3 (Research/Lara) and 4 (Weeah/Clipper) and 6-row feed barley (Cape). Ileal digestibilities of dry matter and amino acids and DE contents were determined. Blockages occurred in the intestines of pigs fed the 6-row barley and ileal digestibility was measured in only four barleys using three pigs. The results are presented in Table 1.

TABLE 1 Ileal digestibility and the contents of DE, protein, lysine and acid detergent fibre (ADF) in barley (DM basis)

	Barley grade no.					SD
	1	2	3	4	6-row	
Protein (g/kg) (N x 6.25)	102	90	98	148	108	
Lysine (g/kg)	4.3	4.0	4.1	5.3	4.1	
ADF (g/kg)	67	69	76	74	91	
DE (MJ/kg)	14.2 ^{ab}	13.8 ^b	14.5 ^a	14.1 ^{ab}	13.0 ^c	0.34
Ileal digestibility (%)						
Dry matter	70.4 ^{ab}	69.7 ^{bc}	72.2 ^a	68.4 ^c		0.94
Lysine	78.1 ^{ab}	75.3 ^b	80.2 ^a	75.1 ^b	-	1.76
Av. amino acid	82.2	82.0	84.7	81.4	-	1.92

a, b, c Within each row, means not followed by the same superscript differ ($P < 0.05$).

According to the work of Taverner and Farrell (1981) with wheat, the higher fibre content of the 6-row barley was expected to reduce its DE content and would also be expected to reduce its amino acid digestibility more than that of other barleys. There was no difference among the remaining four barley grades in the average true digestibilities of amino acids but there was significantly ($P < 0.05$) more of the lysine absorbed from No. 3 barley than from barleys Nos. 2 and 4.

The differences in lysine digestibility among grades of barley are of less practical significance than differences in total lysine content. Except for 6-row feed barley, it is suggested that for most practical purposes, the DL content of barley can be calculated using an average value for lysine digestibility of 77%.

BATTERHAM, E.S., LEWIS, C.E., LOWE, R.F. and McMILLAN, C.J. (1980).

Anim. Prod. **31**: 259.

TAVERNER, M.R. and FARRELL, D.J. (1981). *Br. J. Nutr.* **46**: 181.

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