EFFECT OF SOURCE AND INCREASING DIETARY CELL WALL LEVELS ON THE DIGESTIBILITY OF DIETARY COMPONENTS BY PIGS

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Reported values of apparent digestibility of cell walls and their constituents by pigs have been variable and often conflicting, due to differences in source of fibre used, the level of fibre in the diet, the composition of the rest of the ration, the plane of nutrition and the age of the pigs-

The purpose of the work reported here was to compare the digestibilities of cell walls and their constituents from a variety of ingredients of widely differing chemical composition. Diets containing the same amount of fibre-free ration plus an amount of fibre from one of eight different sources to provide 69, 151, 248 or 367 g of cell walls per day, approximating 7.5, 15.0, 22.5 or 30.0% of the total dry matter, were fed to pigs (45 kg liveweight) kept in metabolism cages. The fibre sources were lupin hulls, soyabean hulls, pea hulls, wheat bran, lucerne stems, maize hulls, maize cobs and oat hulls. The results of the apparent digestibilities of dry matter and cell walls for the four levels of feeding are shown in Table 1.

TABLE 1 Digestibility coefficients of dry matter and cell wall from eight sources of fibre fed to pigs at four levels.

		Fibre Source							
Item	Level of Feeding %	Lupin hulls	Soyabean hulls	Pea hulls	Wheat bran	Lucerne stems	Maize hulls	Maize cobs	Oat hulls
Dry matter	7.5	73.1^{a}	78.3^{a}	50.5^{bc}	61.5^{ab}	42.2^{c}	31.6^{cd}	16.8^{d}	26.7^{cd}
	15.0	76.3^{a}	76.9^{a}	41.2^{b}	66.1^{c}	44.0^{b}	39.1^{b}	19.7^{d}	21.6^{d}
	22.5	70.3^{a}	71.4^{a}	25.0^{b}	64.1^{a}	44.5^{c}	42.7^{c}	24.2^{b}	14.0^{d}
	30.0	71.6^{a}	72.8^{a}	10.8^{b}	62.2^{c}	43.0^{d}	24.8^{e}	21.4^{be}	13.2^{b}
Cell Wall	7.5	90.5^{a}	78.3^{b}	66.1^{c}	50.4^{d}	24.4^{ef}	32.7^{e}	23.2^{ef}	19.8^{f}
	15.0	84.3^{a}	82.6^{a}	46.9^{b}	48.0^{b}	17.5^{c}	41.6^{b}	10.4^{c}	21.3^{c}
	22.5	79.5^{a}	78.3^{a}	19.7^{b}	51.9^{c}	20.0^{b}	44.3^{c}	20.9^{b}	14.5^{b}
	30.0	82.0^{a}	80.9^{a}	3.0^{b}	49.9^{c}	20.1^{d}	27.8^{d}	18.1^{d}	16.0^{d}

a,b,c,d,e,f Different superscripts within rows denote significance ($P<0.05$)

The dry matter and cell wall digestibilities varied widely among the fibre sources used. In some cases, particularly in pea hulls, the level of fibre in the diet caused pronounced differences in digestibility. The reasons why some fibre sources and not others, caused these effects are not clear, but presumably different rates of passage and different rates of digestion were responsible.

It is concluded that different fibre sources may contribute widely differing amounts of energy to pigs and that, in some instances, the level of fibre in the diet has a marked effect.

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