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Incidence of the incorporation of wheat bran in the diet on the rate of passage of the fibre fractions in the rabbit

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The addition of a fibre source in a basal diet could affect the rate of passage (RP) of the diet ingredients and could modify the nutritive value of the diet, as demonstrated for ruminants. The aim of this study was to investigate in the rabbit the effect of the wheat bran (WB) incorporation level in a basal concentrate diet (BD) on the RP of the fibre fractions from WB and BD.

The wheat bran was incorporated at 4 levels (0–20–40–60%) in a basal diet mainly composed of wheat (60%), wheat straw (15%) sunflower and soybean meal (22%). The 4 diets were similar in crude protein content (17.5%) and ADF content (14.1%), and differed mainly in their NDF content (27.7–31.6–36.4–41.3% DM respectively from 0 to 60% WB incorporation), and the diets were given on *ad libitum* basis to 4 groups of 7 New Zealand white rabbits (8 weeks old). The fibre particles of BD and WB were labelled with ¹⁶⁹Ytterbium and ¹⁴¹cerium, respectively (Beeber and Ellis, 1985), in order to obtain simultaneous but separate RP measurement. The 2 types of labelled particles were given orally as a single dose at 9.30 am, and the mean retention

time (MRT) in the whole digestive tract was calculated as follows: $MRT = \sum m_i / \sum \dot{m}_i$ (m_i = quantity of marker excreted in feces, at the time t_i).

During the MRT measurements, the mean feed intake was respectively 88.9, 90.5, 103.0 and 102.5 g DM/d from 0 to 60% WB incorporation, and a significant difference ($P < 0.05$, SEM = 4.1) was detected only when comparing the diets '0 and 20%' with '40–60% WB (contrast method). The MRT of the 2 fibre fractions (WB and BD) were not different ($P < 0.99$) whatever the level of WB. The MRT was reduced significantly as the incorporation of WB increased. This shortening in MRT was correlated with the dry matter intake ($r^2 = 0.59$, $n = 19$) and particularly with the quantity of NDF ingested ($r^2 = 0.69$). The transit time (mean = 4.3 h), defined as the first appearance of the marker in feces, was not affected by the incorporation level of WB ($P < 0.71$), and it did not differ between the 2 fibre fractions.

Beever DE, Ellis WC (1985) *Proc Nutr Soc* 44, 117A

Table I. Mean retention time (h) of the fibre fraction from wheat bran and basal diet.

MRT	Incorporation rate of wheat bran (%)				SEM	P level
	0	20	40	60		
	(n = 4)	(n = 5)	(n = 6)	(n = 4)		
Basal diet (¹⁶⁹ Yb)	31.8 ^a	27.3 ^{ab}	23.0 ^{ab}	21.0 ^b	1.7	0.031
Wheat bran (¹⁴¹ Ce)	–	27.4	23.0	20.7	2.1	0.073

^{a,b} Means with different superscripts differ ($P < 0.05$).