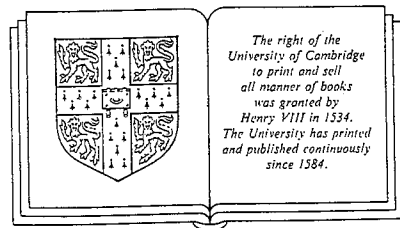


# Energy metabolism in animals and man

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Table 3.1. *The mean retention time of food in the digestive tract of different species*

Species	Mean retention time (h)
Water shrew ( <i>Neomys fodiens</i> )	2
Mink ( <i>Mustela vison</i> )	4
Field vole ( <i>Microtus agrestis</i> )	7
Bank vole ( <i>Clethrionomys glareolus</i> )	11
Cat ( <i>Felis catus</i> )	13
Rabbit ( <i>Oryctolagus cuniculus</i> )	15
Dog ( <i>Canis familiaris</i> )	23
Rat ( <i>Rattus norvegicus</i> )	28
Horse ( <i>Equus caballus</i> )	29
Elephant ( <i>Elephas maximus</i> )	33
Pig ( <i>Sus scrofa</i> )	43
Goat ( <i>Capra hircus</i> )	43
Man ( <i>Homo sapiens</i> )	46
Sheep ( <i>Ovis aries</i> )	47
Ox ( <i>Bos taurus</i> )	60

*Note:*

Largely from Warner (1981).

van Soest (1985) have suggested that the lower limit to ruminant animal size is that at which the size-related retention time of food is equal to the time needed to digest coarse plant material. Man has a mean retention time of 46 h and this is highly variable (Cummings 1978). In those species in which measurements have been made, increasing the amount of food given increases the rate of passage, and, in omnivora, so too does an increase in fibre content. The faeces excreted in any 24 h period thus reflect only part, if any, of the current day's food consumption and parts of previous days' intakes. Adequate preliminary periods in which the amount of food and its composition is kept constant avoid this potential error.

Even when these precautions are taken, errors can arise because of the periodicity of faecal elimination. Periods of collection have to be sufficiently long to ensure that the mean 24 h estimate of the amount excreted is reliable. Errors of this sort can occur readily in man. For example, van Es *et al.* (1982) collected faeces for four days continuously, yet at low levels of intake the frequency of defaecation was such that the results were clearly in error. The sloth appears to hold the record for infrequent bowel emptying; it apparently defaecates once per week (Montgomery & Sunquist 1978).