

MEASUREMENTS OF GASTRO-INTESTINAL TRANSIT TIME IN MAN

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Many of the effects of dietary fibre have been attributed to its ability to decrease gut transit time (Burkitt & Trowell, 1975) but there are few controlled studies of the effect of fibre on transit time, probably because of the need for rather specialised facilities for the latter measurement. The following modification of the method of Cummings and Wiggins (1976) requires only simple apparatus; it is safe and rapid.

Five gelatin capsules each containing 24 inert regularly shaped plastic coloured pellets (weight 36 - 65 mg, specific gravity (SG) 0.9 - 1.3) are ingested in a specific colour sequence at 24 h intervals prior to collection of a single stool. The collected stool is emulsified in a small quantity of 1% Triton-X100 solution and poured into a large funnel with a fine-mesh sieve. Frequent washings under pressure disperse the faecal matter and the pellets are easily recoverable from the mesh surface. The pellets are counted and single stool transit time (SST) calculated by the formula of Cummings and Wiggins (1976) as

$$SST = \frac{T_1 \cdot S_1 + T_2 \cdot S_2}{S_1 + S_2}$$

where T_1 and T_2 are times in h from the ingestion of the two markers present in the greatest number in the sieve to the time the stool is passed, and S_1 and S_2 represent the number of each of these two marker pellets present.

The reproducibility of measurements of gastrointestinal transit is shown in Table 1. For each subject differences were not significant ($P > 0.05$) between the 3 replicates.

TABLE 1 Measurement of transit time (h) of food residues in the gastro-intestinal tract using coloured plastic pellets

Subject	Replicate		
	1	2	3
A	26.4	30.1	28.4
B	29.3	27.3	25.3
C	33.0	39.9	36.0

Incubation of samples for 48 h at 37°C in solutions of 1N HCl-pepsin followed by bile salts - pancreatin at physiological concentrations showed no discolouration of pellets. Yellow and white pellets were excluded because they were indistinguishable when mixed with faecal matter.

Ten comparisons between light (SG < 1.0) and heavy (SG > 1.0) pellets gave similar mean values of 47.6 ± 5 and 48.0 ± 5.

It is apparent that the technique described for measuring faecal transit time is both repeatable and independent of the specific gravity of the different plastic pellets used.

BURKITT, D.P. & TROWELL, H. (1975) - "Refined Carbohydrate Foods and Disease" (Academic Press, London).

CUMMINGS, J.H. and WIGGINS, H.S. (1976). Gut 17, 219-223.

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