

Supplementary Materials: A Non-Nutritive Feeding Intervention Alters the Expression of Efflux Transporters in the Gastrointestinal Tract

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S1. Fibre meal description

The fibre meal was composed of cellulose. The fibre meal was provided as cellulose pellets (Figure 1A) where Solka Flocc 200 cellulose was pelleted. To obtain, the fibre meal suspension, the cellulose powdered were crushed using a pestle and mortar. The resulting powder is shown in Figure 1A. The powder was composed of cellulose fibres, off-white in colour and heterogeneous in particle size uniformity. Light microscope images of the powder is shown in Figure 1B and C.

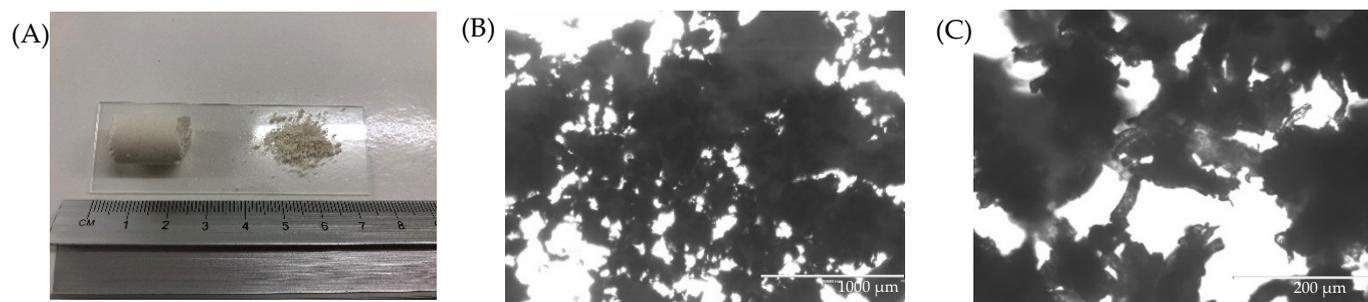


Figure S1. Images of (A) left cellulose pellet and right powdered cellulose, (B) and (C) light microscope images.

S2. Swelling capacity

The powders were assessed for swelling properties. The powder (0.5 g) was suspended in deionised water (4 mL) under magnetic stirring for 4 hours. Filter paper was used to remove water after 4 h. Equation 1 was used to calculate the swelling capacity of the cellulose powder, where W_s was the weight of the suspension and W_p was the weight of the powder.

$$\text{Swelling capacity} = \frac{W_s - W_p}{W_p} \quad (\text{S1})$$

The cellulose particle has a swelling capacity of 160%. Figure S2 shows the fibre meal suspension.

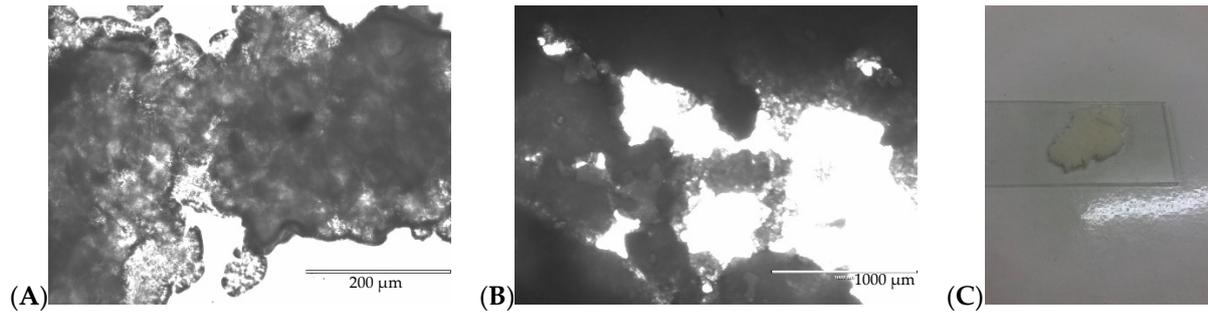


Figure S2. (A), (B) Light microscope images of fibre cellulose suspension and (C) image of fibre cellulose suspension after 4 h of magnetic stirring.

Table S1. P-glycoprotein (P-gp) expression (ng/mg) across the intestinal tract in male (blue) and female (pink) from time 0 to 2 h under fasted and fed states (normal meal and fibre meal (mean \pm SD, n = 6).

P-gp male fasted at time = 0h		
	Mean	SD
Duodenum	9.89	0.42
Jejunum	12.42	0.70
Ileum	12.95	0.31
P-gp male normal meal fed at time = 0.5 h		
	Mean	SD
Duodenum	10.52	0.67
Jejunum	10.35	0.35
Ileum	10.71	0.49
P-gp male normal meal fed at time = 1 h		
	Mean	SD
Duodenum	10.65	0.46
Jejunum	8.58	0.23
Ileum	8.97	0.28
P-gp male normal meal fed at time = 2 h		
	Mean	SD
Duodenum	10.36	0.65
Jejunum	9.97	0.49
Ileum	10.24	0.54
P-gp male fibre meal fed at time = 0.5 h		
	Mean	SD
Duodenum	12.49	0.12
Jejunum	17.07	0.56
Ileum	16.81	0.37
P-gp male fibre meal fed at time = 1 h		
	Mean	SD
Duodenum	11.93	0.20
Jejunum	18.54	0.38
Ileum	18.16	0.40

P-gp female fasted at time = 0h		
	Mean	SD
Duodenum	10.67	0.70
Jejunum	10.58	0.35
Ileum	10.32	0.39
P-gp female normal meal fed at time = 0.5 h		
	Mean	SD
Duodenum	10.59	0.29
Jejunum	16.13	0.48
Ileum	10.86	0.48
P-gp female normal meal fed at time = 1 h		
	Mean	SD
Duodenum	10.75	0.25
Jejunum	17.30	1.32
Ileum	11.09	0.42
P-gp female normal meal fed at time = 2 h		
	Mean	SD
Duodenum	10.99	0.52
Jejunum	12.97	1.17
Ileum	10.77	0.23
P-gp female fibre meal fed at time = 0.5 h		
	Mean	SD
Duodenum	12.91	0.57
Jejunum	16.36	1.07
Ileum	15.71	0.40
P-gp female fibre meal fed at time = 1 h		
	Mean	SD
Duodenum	12.11	0.24
Jejunum	16.68	1.33
Ileum	16.04	0.34

P-gp male fibre meal fed at time = 2 h		
	Mean	SD
Duodenum	11.58	0.24
Jejunum	19.07	0.48
Ileum	15.84	0.44

P-gp female fibre meal fed at time = 2 h		
	Mean	SD
Duodenum	11.97	0.46
Jejunum	18.38	0.90
Ileum	17.02	0.33

Table S2. Breast cancer resistance protein (BCRP) expression (ng/mg) across the intestinal tract in male (blue) and female (pink) from time 0 to 2 h under fasted and fed states (normal meal and fibre meal) (mean \pm SD, n = 6).

BCRP male fasted at time = 0h		
	Mean	SD
Duodenum	8.24	0.55
Jejunum	8.88	0.89
Ileum	9.87	0.24
BCRP male normal meal fed at time = 0.5 h		
	Mean	SD
Duodenum	8.54	0.41
Jejunum	9.50	0.28
Ileum	10.08	0.44
BCRP male normal meal fed at time = 1 h		
	Mean	SD
Duodenum	8.79	0.31
Jejunum	9.61	0.70
Ileum	10.59	0.68
BCRP male normal meal fed at time = 2 h		
	Mean	SD
Duodenum	9.04	0.36
Jejunum	11.37	1.02
Ileum	10.96	0.88
BCRP male fibre meal fed at time = 0.5 h		
	Mean	SD
Duodenum	10.00	0.48
Jejunum	13.21	2.28
Ileum	13.59	0.60
BCRP male fibre meal fed at time = 1 h		
	Mean	SD
Duodenum	11.15	0.38
Jejunum	13.25	0.65
Ileum	13.14	0.73
BCRP male fibre meal fed at time = 2 h		
	Mean	SD
Duodenum	12.82	0.54
Jejunum	14.22	2.20

BCRP female fasted at time = 0h		
	Mean	SD
Duodenum	9.32	0.36
Jejunum	8.92	0.55
Ileum	10.30	0.49
BCRP female normal meal fed at time = 0.5 h		
	Mean	SD
Duodenum	11.40	1.95
Jejunum	11.13	2.26
Ileum	10.18	0.22
BCRP female normal meal fed at time = 1 h		
	Mean	SD
Duodenum	10.13	0.89
Jejunum	10.60	0.81
Ileum	9.94	0.35
BCRP female normal meal fed at time = 2 h		
	Mean	SD
Duodenum	9.93	0.35
Jejunum	9.96	0.27
Ileum	10.63	0.76
BCRP female fibre meal fed at time = 0.5 h		
	Mean	SD
Duodenum	10.63	0.42
Jejunum	12.93	1.14
Ileum	13.48	0.75
BCRP female fibre meal fed at time = 1 h		
	Mean	SD
Duodenum	12.08	0.46
Jejunum	14.00	0.43
Ileum	13.97	0.50
BCRP female fibre meal fed at time = 2 h		
	Mean	SD
Duodenum	13.04	0.27
Jejunum	14.74	0.76

Ileum	14.38	0.69
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Ileum	14.49	0.55
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Table S3. Multidrug resistance protein 2 (MRP2) expression (ng/mg) across the intestinal tract in male (blue) and female (pink) from time 0 to 2 h under fasted and fed states (normal meal and fibre meal) (mean \pm SD, n = 6).

MRP2 male fasted at time = 0h		
	Mean	SD
Duodenum	2.90	0.37
Jejunum	3.64	0.31
Ileum	4.06	0.28
MRP2 male normal meal fed at time = 0.5 h		
	Mean	SD
Duodenum	3.70	0.25
Jejunum	6.37	0.52
Ileum	5.86	0.37
MRP2 male normal meal fed at time = 1 h		
	Mean	SD
Duodenum	4.20	0.13
Jejunum	5.51	0.85
Ileum	6.28	0.27
MRP2 male normal meal fed at time = 2 h		
	Mean	SD
Duodenum	3.98	0.46
Jejunum	5.08	0.64
Ileum	6.00	0.70
MRP2 male fibre meal fed at time = 0.5 h		
	Mean	SD
Duodenum	4.80	0.26
Jejunum	7.15	0.22
Ileum	6.13	0.26
MRP2 male fibre meal fed at time = 1 h		
	Mean	SD
Duodenum	4.95	0.19
Jejunum	7.26	0.70
Ileum	7.19	0.35
MRP2 male fibre meal fed at time = 2 h		
	Mean	SD
Duodenum	5.83	0.17
Jejunum	7.39	0.07
Ileum	7.21	0.33

MRP2 female fasted at time = 0h		
	Mean	SD
Duodenum	3.84	0.31
Jejunum	4.23	0.57
Ileum	5.08	0.21
MRP2 female normal meal fed at time = 0.5 h		
	Mean	SD
Duodenum	3.84	0.24
Jejunum	4.46	0.49
Ileum	4.80	0.27
MRP2 female normal meal fed at time = 1 h		
	Mean	SD
Duodenum	4.10	0.19
Jejunum	4.28	0.72
Ileum	5.28	0.27
MRP2 female normal meal fed at time = 2 h		
	Mean	SD
Duodenum	4.11	0.43
Jejunum	4.51	0.57
Ileum	5.19	0.36
MRP2 female fibre meal fed at time = 0.5 h		
	Mean	SD
Duodenum	5.13	0.39
Jejunum	6.75	0.43
Ileum	6.72	0.51
MRP2 female fibre meal fed at time = 1 h		
	Mean	SD
Duodenum	5.36	0.39
Jejunum	6.82	0.68
Ileum	7.27	0.09
MRP2 female fibre meal fed at time = 2 h		
	Mean	SD
Duodenum	6.05	0.16
Jejunum	7.33	0.18
Ileum	7.56	0.68