Electronic Supplementary Material (ESI) for Food & Function.

Supplementary Table 1. Liquid Inflows and gastric emptying in the human gastric simulator

Time (min)	HCl Inflow 1*		SGF + Pepsin Inflow 2*		Total liquid entered into HGS (mL)	Gastric emptying (mL)
	Amount released (mL)	Rate (mL/min)	Amount released (mL)	Rate (mL/min)		
10	21	0.7	69	2.3	30	23
20					30	51
30					30	46
60	25	0.8	81	2.7	106	114
90	14	0.5	39	1.3	53	90
120	13	0.4	18	0.6	31	49
150	12	0.4	10	0.3	22	24
180	9	0.3	9	0.3	18	23
Total	**94**		**226**		**320**	**420**

*The two inflows were maintained to mimicked the gastric secretions and dilution of food in the human stomach fed a solid meal, adapted from Malagelada et al., (1976).

Malagelada J-R, Longstreth GF, Summerskill WHJ, Go VLW. Measurement of gastric functions during digestion of ordinary solid meals in Man. *Gastroenterology*, 1976, **70**(2), 203-10.

Supplementary Table 2. Inclusion list for parallel reaction monitoring.

Peptide ID	Mass (*m/z*)	CS [*z*]	Polarity	Start (min)	End (min)	NCE
P7	808.8944	2	+	0.3	0.8	22
P6	813.9051	2	+	0.3	0.8	22
P8	1265.6046	2	+	2.2	2.9	16
P9	1164.9482	3	+	2.8	3.9	16
P1	784.9270	2	+	4.2	4.6	15
P1H	787.9303	2	+	4.2	4.6	15
P3	1032.5437	3	+	4.45	4.8	15
P2	1132.0989	2	+	4.5	4.85	16
P4	1029.5433	3	+	4.65	5.05	14
P5	1304.0170	3	+	4.85	5.2	15

Order of list based on their relative retention time.

P1, LQLQPFPQPQLPY; P2, LQLQPFPQPQLPYPQPQPF; P3, LQLQPFPQPQLPYPQPHLPYPQPQPF; P4, LQLQPFPQPQLPYPQPQLPYPQPQPF; P5, LQLQPFPQPQLPYPQPQLPYPQPQLPYPQPQPF (33-mer); P6, RPQQPYPQPQPQY; P7, RPQQPYPQSQPQY; P8, FQPSQQNPQAQGSFQPQQLPQF; P9, VRVPVPQLQPQNPSQQQPQEQVPLVQQQQF.

Supplementary Table 3. Trace finder peptide quantitation ions settings.

Peptide ID	Mass (*m/z*)	Target Peak 1	Confirming peak (T1C1)	Target peak 2
P7	808.8944	1210.5965	1182.5973	407.1925
P6	813.9051	1220.6172	1192.6212	407.1925
P8	1265.6046	2141.0195	857.4502	391.1969
P9	1164.9482	1254.1615	1017.6191	987.5244
P1	784.9270	1290.7208	617.3293	279.1341
P1H	787.9303	1293.7296	618.3329	279.1341
P3	1032.5437	1417.7468	1305.1910	263.1391
P2	1132.0989	2002.0605	713.3612	488.2505
P4	1029.5433	713.3608	1550.8344	263.1389
P5	1304.0170	713.3613	2374.2735	263.1390

Order of list based on their relative retention time.

Supplementary Table 4: Gastric emptying (GE) rates at different digestion times.

Time	GE, %
10	7.1
20	22.9
30	35.7
60	59.3
90	77.6
120	85.5
150	88.5

Adapted from (Malagelada, 1977; Malagelada, Longstreth, Summerskill, & Go, 1976).

Malagelada, J.-R. (1977). Quantification of Gastric Solid-Liquid Discrimination During Digestion of Ordinary Meals. *Gastroenterology, 72*(6), 1264-1267. doi:10.1016/S0016-5085(77)80024-3

Malagelada, J.-R., Longstreth, G. F., Summerskill, W. H. J., & Go, V. L. W. (1976). Measurement of Gastric Functions During Digestion of Ordinary Solid Meals in Man. *Gastroenterology, 70*(2), 203-210. doi:10.1016/S0016-5085(76)80010-8

Calculation 1. Example of the calculation used to determine the free amino groups present in the small intestine

The calculation of the amount of free amino groups present in the small intestine at 30 min is used as an example to show how the observed data in this study and the gastric emptying values in Supplementary Table 3 were used in the calculation.

Based on Figure 1, the amount of free amino groups present in the small intestine at 30 min are the free amino groups in the 10 min gastric and 20 min small intestinal digested sample and free amino groups in the 20 min gastric and 10 min small intestinal digested sample. The free amino groups of each sample were calculated using the equation described in Calculations of Materials and Methods, and the following information was obtained:

- Amount of free amino groups in the 10 min gastric and 20 min small intestinal digested sample was 5,603 µg/g of bread
- Amount of free amino groups in the 20 min gastric and 10 min small intestinal digested sample was 5,794 µg/g of bread
- The gastric emptying at 10 min 7.1% (GE_{10})
- The gastric emptying at 20 min 22.9% (GE_{20})

The calculation was done based on one gram of bread (DM).

Amount of bread (mg) released from the stomach at 0-10 min

$$1{,}000\ x\ \frac{GE_{10}}{100}$$

$$1{,}000\ x\ \frac{7.1}{100} = 71.0$$

Amount of bread (mg) released from the stomach at 10-20 min

$$1{,}000\ x\ \frac{GE_{20} - GE_{10}}{100}$$

$$1{,}000\ x\ \frac{(22.9 - 7.1)}{100} = 158.8$$

Amount of free amino groups present in the bread released from the stomach at 10 min

= 0.071 g x 5,603 µg/g of bread = 397.81 µg/g of bread

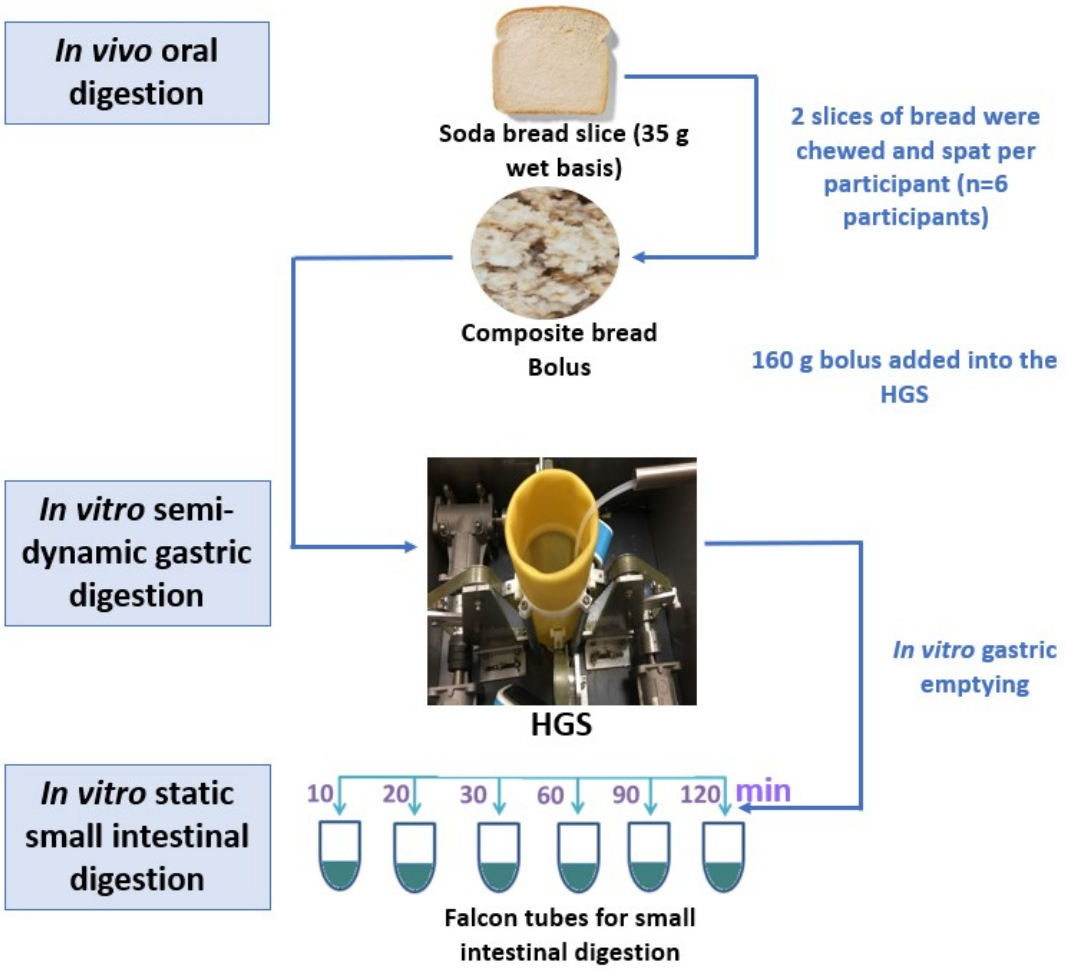
Amount of free amino groups present in the bread released from the stomach at 20 min

= 0.158 g x 5,794 µg/g of bread = 915.45 µg/g of bread

Total free amino groups present in the small intestine at 30 min

= 397.81 + 915.45 = 1,313.26 μg/g of bread

The same equations were used to determine the amount of epitopes in the small intestine at 30 min.



Supplementary Figure 1. Graphical illustration of dynamic *in vivo* and *in vitro* gastrointestinal digestion conducted during the experiment.

HGS, human gastric simulator