Average Content	Dosage for one sachet	% VNR
Proteases	20 mg	
Lipases	20 mg	
Beta (β)-galactosidase	10 mg	
Alpha (α)-galactosidase	10 mg	
Citrates	224 mg	
Calcium	120 mg	15%
Cynara scolymus L. (artichoke) d.e.	200 mg	
Foeniculum vulgare Miller, (fennel) d.e.	80 mg	
Rice powder	50 mg	
Vitamin B2	3.5 mg	250%

Table SM1: Active principles composition of the antacid and prodigestive formulation BAD.

SSF					**SGF**		**SIF**
			pH 7		**pH 3**		**pH 7**
Constituents	**Stock conc.**		**Vol. of stock**	**Conc. in SSF**	**Vol. of stock**	**Conc. in SGF**	**Vol. of stock**
	g L^{-1}	**Mol L^{-1}**	**mL**	**mmol L^{-1}**	**mL**	**Mmol L^{-1}**	**mL**
KCl	37	0.5	15.1	15.1	6.9	6.9	6.8
KH_2PO_4	68	0.5	3.7	3.7	0.9	0.9	0.8
$NaHCO_3$	84	1	6.8	13.6	12.5	25	42.5
NaCl	117	2	-	-	11.8	47.2	9.6
$MgCl_2(H2O)_6$	31	0.2	0.5	0.15	0.4	0.1	1.1
$(NH4)_2CO_3$	48	0.5	0.06	0.06	0.5	0.5	-
$CaCl_2(H2O)_2$	44	0.3	-	1.5 (0.75^)	-	0.15 (0.075^)	0.7
Other constituents (enzymes and bile salts)							
-	**Pepsin**			**Trypsin (in pancreatin)**		**Lipase**	**Bile s**
-	2000 U/mL			100 U/mL		2000 U/mL	10 m

Table SM2: Composition of simulated digestive fluids (SSF: simulated salivary fluid; SGF: simulated gastric fluid; SIF: simulated intestinal fluid) used during the *in vitro* digestive process proposed by Minekus et al., 2014. Volumes are calculated for a final volume of 500 mL for each simulated fluid. ^ Ca2+ concentration in the final digestion mix.

pH				
Time (min)	**Fasted**		**Fed**	
	Ctrl	**BAD**	**Ctrl**	**BAD**
0	3.27 ± 0.03	3.27 ± 0.03	2.22 ± 0.00	2.22 ± 0.00
1	3.27 ± 0.02	3.51 ± 0.01	n.d.	n.d.
5	3.27 ± 0.02	3.62 ± 0.08	n.d.	n.d.
15	3.27 ± 0.02	4.07 ± 0.03	2.23 ± 0.00	3.62 ± 0.01
30	3.27 ± 0.03	4.23 ± 0.02	2.23 ± 0.00	3.72 ± 0.02
60	3.27 ± 0.03	4.29 ± 0.00	2.23 ± 0.00	3.76 ± 0.03
90	n.d.	n.d.	2.23 ± 0.00	3.77 ± 0.03
120	n.d.	n.d.	2.23 ± 0.00	3.77 ± 0.02

Table SM3: Antacid activity of BAD. The antacid activity of BAD was measure both in fasted (pH 2.0) and fed (pH 3.0) conditions. The pH was measured at different time-points (0, 15, 30, 60, 90, 120 min) following BAD addition. The results are reported as mean ± standard deviation. BAD: Biochetasi Acidità e Digestione; Ctrl: Control.

	Triglycerides (%)	
	Without Digestive Enzymes	**With Digestive Enzymes**
Ctrl	0.0 ± 0.0	0.3 ± 0.0
BAD	0.1 ± 0.1	0.4 ± 0.1
SF	100 ± 0.0	12.2 ± 1.4
BAD +SF	11.4 ± 1.9	6.0 ± 0.7

Table SM4: Prodigestive effect on lipids of BAD lipases in absence and presence of digestive enzymes. To assess the prodigestive activity of BAD towards lipids, a standard food, containing olive oil as a lipid (triglycerides) source, was digested with an *in vitro* digestive process model, in absence (without digestive enzymes) or presence (with digested enzymes) of digestive enzymes. The lipolytic activity of BAD supplemented lipases was determined by measuring triglycerides concentration at the end of the digestive process. The results are reported as mean ± standard deviation. Ctrl: Control; SF: Standard Food; BAD: Biochetasi Acidità e Digestione.

	Glucose (mg)	
	Without Digestive Enzymes (Lactose)	**With Digestive Enzymes (Starch)**
Ctrl	0.0 ± 0.1	0.0 ± 30.9
BAD	5.6 ± 1.2	116.7 ± 69.8
SF	0.9 ± 0.1	1693.4 ± 34.4
SF+Enzyme	1.5 ± 0.1	-
BAD+SF	176.8 ± 17.7	1716.0 ± 104.0
BAD+SF+Enzymes	193.4 ± 13.7	-

Table SM5: Prodigestive effect on carbohydrates of BAD galactosidases in absence and presence of digestive enzymes. To assess the prodigestive activity of BAD towards carbohydrates, a standard food, containing lactose or starch as a carbohydrates source, was digested with an *in vitro* digestive process model, in absence or presence of digestive enzymes. The results are reported as mean ± standard deviation. Ctrl: Control; SF: Standard Food; BAD: Biochetasi Acidità e Digestione.

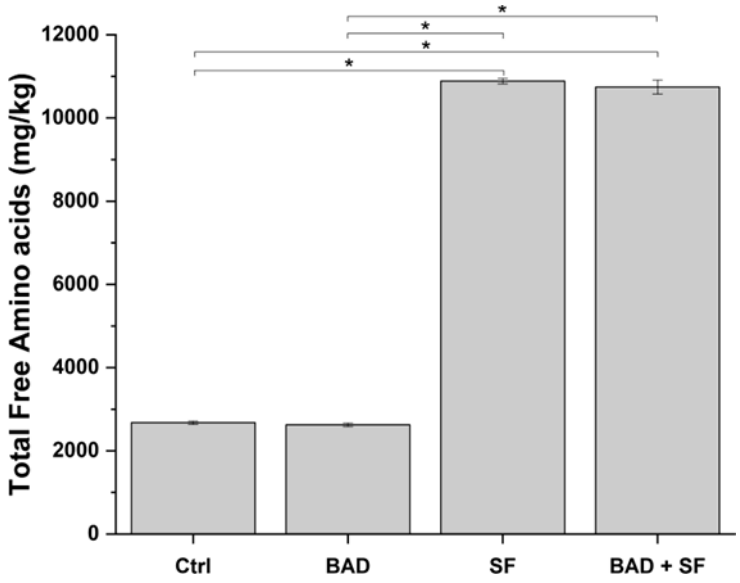

Figure SM1: Prodigestive effect on proteins of BAD proteases in presence of digestive enzymes. To assess the prodigestive activity of BAD towards proteins, a standard food, containing BSA as a protein source, was digested with an *in vitro* digestive process model, in presence of digestive enzymes. The proteolytic activity of BAD supplemented proteases was determined by measuring released free amino acids (mg/kg). Ctrl: control; SF: Standard Food; BAD: Biochetasi Acidità e Digestione. $^{*}p<0.05$.

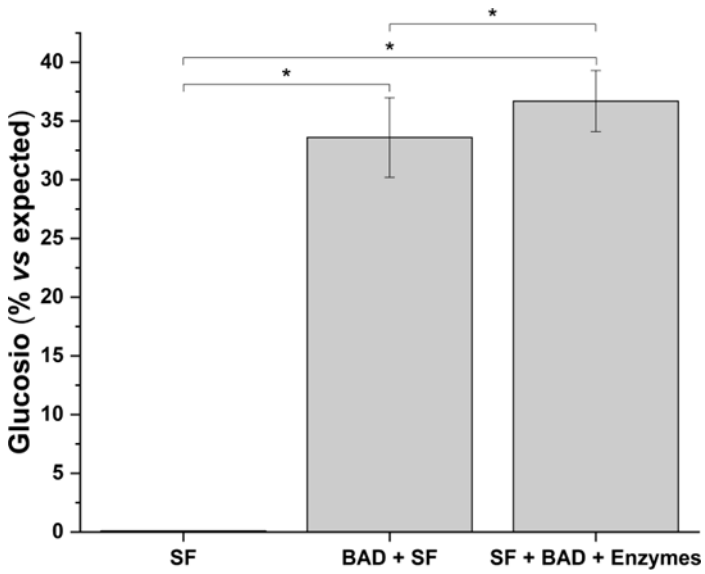

Figure SM2: Lactose prodigestive effect on of BAD lactase in absence of digestive enzymes. To assess the prodigestive activity of BAD towards lactose, a standard food, containing lactose as a carbohydrates source, was digested with an *in vitro* digestive process model, in absence of digestive enzymes. The carbohydrate hydrolytic activity of BAD supplemented lactase was determined by measuring the percentage (%) of release glucose compared to the expected one. SF: Standard Food; BAD: Biochetasi Acidità e Digestione. $^{*}p<0.05$.