

## Supplementary Material

**Table S1.** Nutritional composition, phytochemical compounds, and antioxidant activity of onion powder

	Onion powder
Protein (g/100 g)	9.75 ± 0.08
Lipids (g/100 g)	1.30 ± 0.06
Carbohydrates (g/100 g)	80.10 ± 2.89
Glucose (g/100 g)	27.7 ± 1.73
Fructose (g/100 g)	20.7 ± 0.46
Sucrose (g/100 g)	4.3 ± 0.11
Total fructans (g/100 g)	4.2 ± 0.10
Total dietary fibre (g/100 g)	23.2 ± 1.15
Soluble fibre (g/100 g)	3.2 ± 0.09
Insoluble fibre (g/100 g)	20.0 ± 0.17
Ash (g/100 g)	4.63 ± 0.07
Total phenols (mg GAE/100 g)	1629.6 ± 60.0
Quercetin 3-glucoside (mg/100 g)	32.22 ± 0.90
Quercetin 4'-glucoside (mg/100 g)	950.00 ± 2.99
Quercetin 3,4'-diglucoside (mg/100 g)	1368.89 ± 8.77
Quercetin 7,4'-diglucoside (mg/100 g)	31.56 ± 0.33
Quercetin 3,7,4'-triglucoside (mg/100 g)	9.16 ± 0.32
Isorhamnetin 4'-glucoside (mg/100 g)	45.16 ± 1.54
Isorhamnetin 3,4'-diglucoside (mg/100 g)	32.00 ± 0.19
Total ACSOs (mg BCSOE/100 g)	4120.89 ± 89.43
Propionaldehyde (mg/100 g)	245.04 ± 39.61
1-Propanethiol (mg/100 g)	23.54 ± 0.90
Hexanal (mg/100 g)	0.04 ± 0.001
2-Methyl 2-pentenal (mg/100 g)	10.80 ± 0.67
Propyl thioacetate (mg/100 g)	0.45 ± 0.03
Dimethyl trisulfide (mg/100 g)	66.41 ± 5.02
Dipropyl disulfide (mg/100 g)	89.45 ± 3.29
Methyl propyl trisulfide (mg/100 g)	42.28 ± 2.14
Dipropyl trisulfide (mg/100 g)	25.50 ± 2.45
Ascorbic acid (mg/100 g)	62.31 ± 0.77
Total vitamin C (mg/100 g)	104.26 ± 4.07
Scavenging of NO <sup>•</sup> (μmol TE/100 g)	1706.00 ± 49.61
ABTS <sup>•+</sup> (μmol TE/100 g)	4936.67 ± 72.65
DPPH <sup>•</sup> (μmol TE/100 g)	1135.00 ± 82.21
FRAP (μmol TE/100 g)	12245.14 ± 60.45

Values are expressed as the mean ± SD (n = 3).

GAE, gallic acid equivalents; ACSOs, *S*-alk(en)yl-L-cysteine sulfoxide; BCSOE, *S*-Butyl-L-cysteine sulfoxide equivalents; NO<sup>•</sup>, nitric oxide radical ABTS<sup>•+</sup>, 2,2'-azinobis(3-ethylbenzothiazoline-6-sulfonic acid) radical cation; DPPH<sup>•</sup>, 2,2-diphenyl-1-picrylhydrazyl radical; FRAP, ferric reducing antioxidant power; TE, trolox equivalents.

**Table S2.** Composition of the experimental diets [control (C), high-cholesterol (HC) and high-cholesterol enriched with onion (HCO)]

Ingredient (g/kg)	C	HC	HCO
Onion powder	–	–	100
Casein	200	200	200
Sucrose	100	100	100
Maize starch	470.49	445.49	368.69
Soya oil	50	50	50
Maize oil	80	80	80
Mineral mixture*	35	35	35
Vitamin mixture†	10	10	10
Cellulose powder	50	50	26.8
Choline bitartrate	2.5	2.5	2.5
<i>tert</i> -butylhydroquinone	0.010	0.010	0.010
L-cystine	2	2	2
Cholesterol	–	20	20
Cholic acid	–	5	5

\* Mineral mix for the AIN-93M diet, g/kg (AIN-93M-MX): calcium carbonate anhydrous, 357.00; potassium phosphate monobasic, 250.00; potassium citrate, tripotassium monohydrate, 28.00; sodium chloride, 74.00; potassium sulphate, 46.00; magnesium oxide, 24.00; ferric citrate, 6.06; zinc carbonate, 1.65; sodium meta-silicate 9H<sub>2</sub>O, 1.45; manganous carbonate, 0.63; cupric carbonate, 0.30; chromium potassium sulfate 12H<sub>2</sub>O, 0.275; boric acid, 0.0815; sodium fluoride, 0.0635; nickel carbonate, 0.0318; lithium chloride, 0.0174; sodium selenate anhydrous, 0.01025; potassium iodate, 0.0100; ammonium paramolybdate 4H<sub>2</sub>O, 0.00795; ammonium vanadate, 0.0066; powdered sucrose, 209.806.

† Vitamin mix for the AIN-93M diet, g/kg (AIN-93-VX): niacin, 3.000; calcium pantothenate, 1.600; pyridoxine-HCl, 0.700; thiamin-HCl, 0.600; riboflavin, 0.600; folic acid, 0.200; biotin, 0.200; vitamin B12 (0.1%), 2.500; vitamin E (all-*rac*- $\alpha$ -tocopheryl acetate, 500 IU/g), 15.000; vitamin A (all-*trans*-retinyl palmitate, 500,000 IU/g), 0.800; vitamin D3 (400,000 IU/g), 0.250; vitamin K1, 0.075; powdered sucrose, 974.655.

‡ Diet energy content was calculated using the factors 16.73 kJ/g (4 kcal/g) for protein, 15.69 kJ/g (3.75 kcal/g) for monosaccharides, 16.53 kJ/g (3.95 kcal/g) for disaccharides, 17.49 kJ/g (4.18 kcal/g) for starch, 8.37 kJ/g (2 kcal/g) for dietary fibre, and 37.65 kJ/g for fat. Control diet, 18540.9 kJ/kg (4431.4 kcal/kg); HC diet, 18856.6 kJ/kg (4506.8 kcal/kg); HCO diet, 18642.4 kJ/kg (4455.6 kcal/kg).

**Table S3.** List of detected compounds in the oxylipin platform with their nomenclature

Standard	Acronym	Full name	Transition	C.V.	C.E.	
External	PGE <sub>1</sub>	prostaglandin E <sub>1</sub>	353.30 > 317.30	18.0	14.0	
	PGD <sub>1</sub>	prostaglandin D <sub>1</sub>	353.30 > 317.30	18.0	14.0	
	PGE <sub>2</sub>	prostaglandin E <sub>2</sub>	351.20 > 271.10	22.0	17.0	
	8- <i>iso</i> -PGE <sub>2</sub>	8- <i>iso</i> -prostaglandin E <sub>2</sub>	351.20 > 271.10	22.0	17.0	
	PGD <sub>2</sub>	prostaglandin D <sub>2</sub>	351.10 > 271.10	17.0	16.0	
	PGF <sub>2α</sub>	prostaglandin F <sub>2α</sub>	353.32 > 193.00	39.0	24.0	
	6-keto-PGF <sub>1α</sub>	6-keto-prostaglandin F <sub>1α</sub>	369.20 > 162.92	40.0	26.0	
	LTB <sub>4</sub>	leukotriene B <sub>4</sub>	335.20 > 195.00	32.0	15.0	
	6- <i>trans</i> -LTB <sub>4</sub>	6- <i>trans</i> -leukotriene B <sub>4</sub>	335.20 > 194.95	33.0	16.0	
	LXA <sub>4</sub>	lipoxin A <sub>4</sub>	351.30 > 115.00	24.0	15.0	
	5-HETE	5-hydroxy-eicosatetraenoic acid	319.12 > 114.92	26.0	15.0	
	8-HETE	8-hydroxy-eicosatetraenoic acid	319.05 > 154.85	26.0	14.0	
	9-HETE	9-hydroxy-eicosatetraenoic acid	319.19 > 179.09	27.0	14.0	
	11-HETE	11-hydroxy-eicosatetraenoic acid	319.00 > 166.81	27.0	15.0	
	12-HETE	12-hydroxy-eicosatetraenoic acid	319.05 > 178.78	28.0	14.0	
	15-HETE	15-hydroxy-eicosatetraenoic acid	319.12 > 174.81	26.0	14.0	
	20-HETE	20-hydroxy-eicosatetraenoic acid	319.27 > 274.92	29.0	16.0	
	5-KETE	5-oxo-eicosatetraenoic acid	317.20 > 203.05	33.0	17.0	
	12-KETE	5-oxo-eicosatetraenoic acid	317.20 > 153.00	28.0	17.0	
	15-KETE	15-oxo-eicosatetraenoic acid	317.20 > 112.90	30.0	17.0	
	5,6-DiHETE	5,6-dihydroxy-eicosatetraenoic acid	335.20 > 114.90	25.0	16.0	
	5,15-DiHETE	5,15-dihydroxy-eicosatetraenoic acid	335.30 > 173.00	24.0	16.0	
			335.30 > 255.10			
	14,15-DiHETE	14,15-dihydroxy-eicosatetraenoic acid	335.20 > 207.10	32.0	17.0	
	17,18-DiHETE	17,18-dihydroxy-eicosatetraenoic acid	335.20 > 247.10	32.0	17.0	
	5(6)-EpETrE	5(6)-epoxy-eicosatrienoic acid	319.20 > 191.06	25.0	12.0	
	8(9)-EpETrE	8(9)-epoxy-eicosatrienoic acid	319.30 > 155.00	26.0	12.0	
	11(12)-EpETrE	11(12)-epoxy-eicosatrienoic acid	319.21 > 166.91	26.0	14.0	
	14(15)-EpETrE	14(15)-epoxy-eicosatrienoic acid	319.30 > 219.00 -	26.0	13.0	
			319.30 > 257.10			
	5,6-DiHETrE	5,6-dihydroxy-eicosatrienoic acid	337.27 > 144.91	33.0	18.0	
	8,9-DiHETrE	8,9-dihydroxy-eicosatrienoic acid	337.20 > 126.90	34.0	21.0	
	11,12-DiHETrE	11,12-dihydroxy-eicosatrienoic acid	337.27 > 166.97	33.0	18.0	
	14,15-DiHETrE	14,15-dihydroxy-eicosatrienoic acid	337.27 > 206.99	34.0	17.0	
	12-HHTrE	12-hydroxy-heptadecatrienoic acid	279.20 > 178.90	27.0	13.0	
	9-HODE	9-hydroxy-octadecadienoic acid	295.27 > 171.01	34.0	18.0	
	13-HODE	13-hydroxy-octadecadienoic acid	295.20 > 195.04	35.0	17.0	
	9-KODE	9-oxo-octadecadienoic acid	293.20 > 185.00	44.0	19.0	
	13-KODE	13-oxo-octadecadienoic acid	293.20 > 112.90	42.0	20.0	
	EKODE	epoxy-keto-octadecenoic acid	309.20 > 291.00	28.0	14.0	
9(10)-EpOME	9(10)epoxy-octadecenoic acid	295.20 > 170.90	32.0	16.0		
12(13)-EpOME	12(13)epoxy-octadecenoic acid	295.18 > 195.04	30.0	16.0		
9,10-DiHOME	9,10-dihydroxy-octadecenoic acid	313.23 > 201.10	40.0	21.0		

	12,13-DiHOME	12,13-dihydroxy-octadecenoic acid	313.14 > 183.06	37.0	21.0
	12(13)-EpODE	12(13)-epoxy-octadecadienoic acid	293.20 > 183.00	29.0	17.0
	5-HETrE	5-hydroxy-eicosatrienoic acid	321.27 > 205.06	26.0	16.0
	8-HETrE	8-hydroxy-eicosatrienoic acid	321.30 > 157.00- 321.30 > 163.00	26.0	18.0
	15-HETrE	15-hydroxy-eicosatrienoic acid	321.27 > 221.08	28.0	15.0
	9-HOTE	9-hydroxy-octadecatrienoic acid	293.20 > 170.90	27.0	16.0
	13-HOTE	13-hydroxy-octadecatrienoic acid	293.20 > 195.20	32.0	16.0
	9-KOTE	9-oxo-octadecatrienoic acid	291.20 > 121.00 - 291.20 > 185.00	38.0	20.0
	5-HEPE	5-hydroxy-eicosapentaenoic acid	317.27 > 114.84	25.0	15.0
	8-HEPE	8-hydroxy-eicosapentaenoic acid	317.00 > 154.90	25.0	13.0
	11-HEPE	11-hydroxy-eicosapentaenoic acid	317.04 > 166.75	23.0	14.0
	12-HEPE	12-hydroxy-eicosapentaenoic acid	317.00 > 178.78	25.0	13.0
	15-HEPE	15-hydroxy-eicosapentaenoic acid	317.11 > 219.05	25.0	13.0
	18-HEPE	18-hydroxy-eicosapentaenoic acid	317.11 > 215.20	25.0	14.0
	14(15)-EpETE	14(15)-epoxy-eicosatetraenoic acid	317.30 > 207.00 - 317.30 > 255.10	24.0	10.0
	17(18)-EpETE	17(18)-epoxy-eicosatetraenoic acid	317.30 > 215.10- 317.30 > 255.10	24.0	11.0
	8-HDoHE	8-hydroxy-docosahexaenoic acid	343.20 > 108.90- 343.20 > 189.00	25.0	13.0
	11-HDoHE	11-hydroxy-docosahexaenoic acid	343.30 > 121.00- 343.30 > 149.00	27.0	14.0
	14-HDoHE	14-hydroxy-docosahexaenoic acid	343.20 > 281.20	26.0	13.0
	17-HDoHE	17-hydroxy-docosahexaenoic acid	343.20 > 281.20	26.0	12.0
	19(20)-EpDPE	19(20)-epoxy-docosapentaenoic acid	343.20 > 281.10	25.0	12.0
Internal	5-HETE-d <sub>8</sub>	5-hydroxy-eicosatetraenoic-d <sub>8</sub> acid	327.21 > 115.88	26.0	15.0
	15-HETE-d <sub>8</sub>	15-hydroxy-eicosatetraenoic-d <sub>8</sub> acid	327.27 > 182.01	27.0	15.0
	20-HETE-d <sub>6</sub>	20-hydroxy-eicosatetraenoic-d <sub>6</sub> acid	325.27 > 281.13	36.0	17.0
	5-KETE-d <sub>7</sub>	5-oxo-eicosatetraenoic-d <sub>7</sub> acid	324.21 > 209.74	34.0	18.0
	LTB <sub>4</sub> -d <sub>4</sub>	leukotriene B <sub>4</sub> -d <sub>4</sub>	339.27 > 153.00	35.0	20.0
	TXB <sub>2</sub> -d <sub>4</sub>	thromboxane B <sub>2</sub> -d <sub>4</sub>	373.20 > 172.95	26.0	15.0
	PGD <sub>2</sub> -d <sub>4</sub>	prostaglandin D <sub>2</sub> -d <sub>4</sub>	355.32 > 193.10	19.0	20.0
	PGE <sub>2</sub> -d <sub>4</sub>	prostaglandin E <sub>2</sub> -d <sub>4</sub>	355.27 > 275.14	29.0	17.0
	PGB <sub>2</sub> -d <sub>4</sub>	prostaglandin B <sub>2</sub> -d <sub>4</sub>	337.23 > 179.00	37.0	21.0
	6-keto-PGF <sub>1a</sub> -d <sub>4</sub>	6-keto-prostaglandin F <sub>1a</sub> -d <sub>4</sub>	373.20 > 166.97	42.0	25.0
	11(12)-EpETrE-d <sub>11</sub>	11(12)-epoxy-eicosatrienoic -d <sub>11</sub> acid	330.27 > 166.89	26.0	14.0
	14,15-DiHETrE-d <sub>11</sub>	14,15-dihydroxy-eicosatrienoic-d <sub>11</sub> acid	348.33 > 207.05	36.0	18.0
	9-HODE-d <sub>4</sub>	9-hydroxy-octadecadienoic-d <sub>4</sub> acid	299.27 > 171.97	34.0	18.0
	9(10)-EpOME-d <sub>4</sub>	9(10)epoxy-octadecenoic -d <sub>4</sub> acid	299.15 > 172.09	30.0	17.0
	9,10-DiHOME-d <sub>4</sub>	9,10-dihydroxy-octadecenoic -d <sub>4</sub> acid	317.18 > 202.93	37.0	20.0

C.V.: Cone voltage; C.E.: Collision energy

**Table S4.** Basic physiological and biochemical parameters in rats fed the control (C), high-cholesterol (HC) and high-cholesterol enriched with onion (HCO) diets for 7 weeks

	C	HC	HCO
<b><i>Food intake parameters</i></b>			
Food intake (g/day/rat)	16.14 ± 0.20a	15.99 ± 0.18a	16.33 ± 0.26a
Food efficiency ratio (g/g)†	19.56 ± 1.26a	18.30 ± 0.48a	17.46 ± 0.74a
Apparent diet digestibility‡	92.98 ± 0.209c	86.32 ± 0.589b	81.11 ± 1.780a
<b><i>Growth parameters</i></b>			
Initial body weight (g)	269.08 ± 6.65a	266.33 ± 4.96a	270.13 ± 7.26a
Final body weight (g)	410.88 ± 6.13a	400.00 ± 6.71a	402.13 ± 6.26a
Body weight gain (g)	141.80 ± 9.75a	133.68 ± 6.93a	132.00 ± 9.36a
<b><i>Plasma lipid profile</i></b>			
Total cholesterol (mg/dL)	83.88 ± 6.86a	198.25 ± 10.61b	224.88 ± 16.02b
HDL-cholesterol (mg/dL)	60.00 ± 4.94a	51.50 ± 3.74a	61.75 ± 4.12a
LDL-cholesterol (mg/dL)	11.88 ± 0.69a	118.63 ± 8.23b	123.50 ± 9.18b
Triacylglycerols (mg/dL)	84.38 ± 6.69b	40.50 ± 3.06a	32.63 ± 2.60a
<b><i>Relative organ weight</i></b>			
Heart (g/100 g body weight)	0.25 ± 0.016a	0.24 ± 0.006a	0.24 ± 0.008a
Liver (g/100 g body weight)	2.83 ± 0.045a	5.08 ± 0.113b	5.45 ± 0.170b
Spleen (g/100 g body weight)	0.17 ± 0.009a	0.32 ± 0.029b	0.27 ± 0.014b

Mean values with their standard error, *n* 8 per group. Mean values within a row with unlike small letters were significantly different, *P* < 0.05 (one-way ANOVA and posterior Tamhane's T2 and Bonferroni *post hoc* tests were used as appropriate, italic small letters indicate Tamhane's T2 *post hoc* test).

† 100 x (body weight gain/total food intake).

‡ 100 x (food intake – faecal weight/food intake).