

Supplementary table S1. Cream cheese composition per 100 g of product¹.

		Control	3g-PL	5g-PL
Dry extract (g)		34.38 ±0.38	34.06 ±0.17	34.14 ±0.09
Proteins (g)		15.26 ±0.21	15.10 ±0.07	15.18 ±0.05
Lipids	Total	12.90 ±0.25	13.24 ±0.30	13.48 ±0.29
- Including:	Polar lipids (g)	ND²	3.09 ±0.15⁴	5.18 ±0.32⁴
	-Sphingomyelin (g)	ND ²	0.78 ±0.06	1.31 ±0.12
	Triglycerides (g)	12.86 ±0.26	10.06 ±0.27	8.18 ±0.09
	SFA (g)	7.56 ±0.60	6.13 ±0.24	5.25 ±0.39
	<i>cis</i> -MUFA (g)	2.82 ±0.12	2.6 ±0.06	2.62 ±0.15
	<i>cis</i> -PUFA (g)	0.23 ±0.02	0.32 ±0.01	0.40 ±0.03
	Cholesterol ³ (mg)	38.88 ±0.90	89.72 ±2.82	119.20 ±3.53
Lactose (g)		3.71 ±0.04	3.77 ±0.06	3.80 ±0.09
Ash (g)		1.67 ±0.08	1.79 ±0.02	1.91 ±0.07
Salt (g)		1.05 ±0.03	1.03 ±0.01	1.04 ±0.00

Data are presented as mean ±SEM.

¹ Resulted from five different batches of cream cheese production.

² Content of polar lipids was below the detection limit (<0.11g/100g of product); sphingomyelin (SM) was thus also undetectable.

³ Total cholesterol content of the product (including free cholesterol and cholesteryl esters).

⁴ Cream cheese PL content beyond the 5-month shelf life was 3.05 ±0.11 g/100g in 3g-PL cheeses and 5.02 ±0.22 g/100g in 5g-PL cheeses.

MUFA: monounsaturated fatty acids; ND: not detectable; PL: polar lipids; PUFA: polyunsaturated fatty acids; SFA: saturated fatty acids.

Supplementary table S2. Nutritional composition of the standardized test meals in the VALOBAB-C and VALOBAB-D trials.

	Quantity (g or mL)	Proteins (g)	Lipids (g)	Carbohydrates (g)
VALOBAB-C: standardized breakfast				
Croissant (x2)	80	5.7	21.5	33.7
Chocolate/hazelnut spread	30	1.6	8.7	17.1
Jam	30	0.1	0.1	16.3
Coffee or tea	250	0.0	0.0	0.0
Total quantity (g)	390	7.4	30.3	67.1
Energy (kcal)	571	30	273	268
% of energy		5.2	47.8	47.0
VALOBAB-C: lunch including test cream cheese				
Bread	50	4.3	0.7	28.7
Cooked Fish	100	19.7	6.5	4
Pastas	200	7.9	1.2	47
Compote	100	0.2	0.1	17
Cream cheese ¹	100	12.6	12.7 ²	2.5
Total quantity (g)	550	44.7	21.2	99.2
Energy (kcal)	767	179	191	397
% of energy		23.3	24.9	51.8
VALOBAB-D: breakfast including test cream cheese				
Cream cheese ¹	100	12.6	12.7 ²	2.5
Bread	50	4.3	0.7	28.7
Jam	30	0.1	0.1	16.3
Butter	10	0.1	8.3	0.1
Coffee or tea	250	0.0	0.0	0.0
[1,1,1 - ¹³ C ₃]- triolein	0.30	0.0	0.30	0.0
[2,2,3,4,4,6 - D ₆]- cholesterol	0.045	0.0	0.045	0.0
Total quantity (g)	440.3	17.1	22.1	47.6
Energy (kcal)	457	68	199	190
% of energy		14.9	43.5	41.6

VALOBAB-D: standardized snack				
Pastas (plain, no egg)	100	4.8	0.8	29.8
Bread	50	4.3	0.7	28.7
Compote	100	0.3	0.2	22
Yoghurt 0%	250	11	0.4	20
Sugar	10	0.0	0.0	10
Total quantity (g)	510.0	20.4	2.1	110.5
Energy (kcal)	543	82	19	442
% of energy		15.0	3.5	81.5

¹ Theoretical composition for each macronutrient; the precise composition of the test cream cheese resulting from the different batches is presented in Table 2.

² Including 0, 3 or 5g of polar lipids.

Supplementary table S3. Summary of the sample collection and analysis scheme in both centres in VALOBAB-C intervention trial.

Analysis type	Centre 1 ¹	Centre 2 ²
Anthropometric and biometric data	x	x
Dietary survey analysis	x	x
Plasma lipids and metabolites	x	x
Gut microbiota	x	x
Chylomicron collection and analysis	x	
Faecal lipids, cholesterol and coprostanol	x ³	
Short-chain fatty acids in faeces		x ⁴

¹ Group size in Centre 1: Control n=9, 3g-PL n=9, 5g-PL n=10.

² Group size in Centre 2: Control n=10, 3g-PL n=10, 5g-PL n=10.

³ For technical reasons: Control n=4-7, 3g-PL n=7-8, 5g-PL n=7-9.

⁴ For technical reasons: Control n=8, 3g-PL n=7, 5g-PL n=8.

Supplementary table S4. Anthropometric and fasting metabolic characteristics of ileostomy subjects randomized into the VALOBAB-D trial at screening.

	n = 4
Age (y)	43 ±8
Sex ratio (M/F)	1/3
Body weight (kg)	65.9 ±7.7
BMI (kg/m ²)	25.4 ±2.0
Waist circumference (cm)	86.8 ±4.4
Hip circumference (cm)	99.5 ±3.5
Waist/hip circumference ratio	0.87 ±0.02
Systolic BP (mmHg)	114.3 ±9.6
Diastolic BP (mmHg)	74.5 ±1.3
Total C (mmol/L)	3.8 ±0.4
LDL-C (mmol/L)	2.4 ±0.2
HDL-C (mmol/L)	1.4 ±0.2
TAG (mmol/L)	1.5 ±0.4
Glucose (mmol/L)	4.3 ±0.2
ASAT (IU/L)	30.0 ±6.1
ALAT (IU/L)	29.0 ±5.5

Data are presented as mean ±SEM.

ALAT: alanine amino transferase; ASAT: alanine aspartate transferase; BMI: body mass index; BP: blood pressure; C: cholesterol; HDL: high-density lipoprotein; IU: international unit; LDL: low-density lipoprotein; TAG: triacylglycerol.

Supplementary table S5. Daily self-reported food intake in the VALOBAB-C trial. Intake was reported the 4 days before (V1) and after (V2) 4 weeks of consumption of 100 g cream cheese/day with or without PL.

	Control (n=19)		3g PL (n=19)		5g PL (n=20)		P _{group}
	V1	ΔV2-V1	V1	ΔV2-V1	V1	ΔV2-V1	
All foods except cheese							
Energy (kcal)	1576.6 ±92.1	22.4 ±66.6	1530.5 ±69.4	-21.5 ±52.8	1815.1 ±76.0	-117.6 ±95.7	0.40
Protein (% TEI)	18.02 ±0.91	-0.71 ±0.81	16.69 ±0.63	-0.18 ±0.95	16.75 ±0.65	0.49 ±0.55	0.55
Fat (% TEI)	28.97 ±0.88	-0.11 ±1.10	28.79 ±1.21	0.26 ±1.29	30.87 ±1.42	-0.65 ±1.28	0.87
Carbohydrates (% TEI)	49.54 ±1.40	1.07 ±1.46	50.79 ±1.26	0.21 ±1.16	48.43 ±1.65	0.25 ±1.25	0.87
Simple sugars (g)	69.04 ±4.65	2.24 ±3.32	65.26 ±5.54	3.63 ±4.54	79.01 ±5.40	0.49 ±4.31	0.86
Fibres (g)	18.06 ±1.01	0.12 ±1.16	17.51 ±1.00	-1.23 ±0.90	19.72 ±1.07	-0.83 ±1.11	0.66
Cholesterol (mg)	224.53 ±20.10	41.53 ±25.57	266.18 ±32.12	-32.26 ±40.67	302.81 ±33.71	-0.67 ±36.18	0.34
Alcohol (% TEI)	0.63 ±0.31	-0.42 ±0.25	0.73 ±0.26	-0.16 ±0.32	1.17 ±0.40	-0.06 ±0.29	0.66
SFAs (g)	18.22 ±1.63	0.01 ±1.38	18.77 ±1.77	-1.29 ±1.54	21.75 ±1.84	0.04 ±1.78	0.80
MUFAs (g)	18.79 ±1.83	-0.05 ±2.02	18.99 ±1.47	-1.32 ±1.48	23.77 ±1.86	-3.18 ±2.13	0.51
PUFAs (g)	7.75 ±0.68	0.27 ±0.94	7.15 ±0.57	0.97 ±0.78	10.40 ±0.77	-1.82 ±0.93	0.07

Data are presented as mean ±SEM.

p_{group} represents p-value associated with group effect as calculated by generalized linear model. *P* values after adjustment for clinical centre, quartiles of volunteer age and waist circumference were also not significant (>0.05). MUFA: monounsaturated fatty acid; PL: polar lipids; PUFA: polyunsaturated fatty acid; SFA: saturated fatty acid; TEI: total energy intake.