

Supplementary Table 1. Correlation between the parameters obtained from the body composition analysis and cytokine levels

Parameter	IL-21 (pg/ml)	IL-22 (ng/ml)	IL-23 (ng/ml) [†]
	ρ	ρ	ρ
Height (cm)	-0.28	-0.00	-0.21
Body weight (kg)	-0.04	0.02	-0.52
BMI (kg/m ²)	0.22	0.08	-0.62 ($p = 0.024$)
Fat tissue (%)	0.17	0.03	-0.42
Fat tissue (kg)	0.08	0.05	-0.45
Visceral fat level	0.14	0.07	0.02
Lean body mass (kg)	-0.11	0.04	-0.19
Total water content (kg)	-0.11	0.03	-0.33
Muscle mass (kg)	-0.11	0.04	-0.19
Bone weight (kg)	-0.13	0.04	-0.20
Right leg adipose tissue (%)	0.29	0.05	-0.40
Right leg adipose tissue (kg)	0.18	0.13	-0.48
Right leg lean body mass (kg)	-0.08	0.03	-0.26
Right leg muscle mass (kg)	-0.07	0.03	-0.26
Left leg adipose tissue (%)	0.25	-0.01	-0.29
Left leg adipose tissue (kg)	0.17	0.11	-0.51
Left leg lean body mass (kg)	-0.06	0.07	-0.19
Left leg muscle mass (kg)	-0.07	0.07	-0.22
Right hand adipose tissue (%)	0.23	0.06	-0.38
Right hand adipose tissue (kg)	0.17	0.12	-0.45
Right hand lean body mass (kg)	-0.09	0.01	-0.23
Right hand muscle mass (kg)	-0.09	0.01	-0.23
Left hand adipose tissue (%)	0.23	0.04	-0.41
Left hand adipose tissue (kg)	0.15	0.09	-0.50
Left hand lean body mass (kg)	-0.11	0.02	-0.18
Left hand muscle mass (kg)	-0.11	0.03	-0.22
Torso adipose tissue (%)	0.01	-0.06	-0.26
Torso adipose tissue (kg)	-0.04	-0.04	-0.44
Torso lean body mass (kg)	-0.15	0.06	-0.13
Torso muscle mass (kg)	-0.15	0.06	-0.13

ρ – Spearman's rank correlation coefficient, n – number of paired observations, bold values indicate statistically significant correlations ($p < 0.05$), [†] Exploratory analysis due to limited number of detectable IL-23 measurements

Supplementary Table 2. Results of the statistical analysis between the frequency of consumption of nutrients and the level of cytokines

Nutrients	IL-21 (pg/ml)	IL-22 (ng/ml)	IL-23 (ng/ml) [†]	Nutrients	IL-21 (pg/ml)	IL-22 (ng/ml)	IL-23 (ng/ml) [†]
	ρ	ρ	ρ		ρ	ρ	ρ
Energy (kcal)	-0.04	0.11	-0.18	Isoleucine (mg)	-0.23	0.16	-0.09
Protein (g)	-0.24	0.16	0.07	Leucine (mg)	-0.24	0.18	-0.09
Fat (g)	-0.11	0.01	-0.27	Lysine (mg)	-0.22	0.18	0.06
Digestible carbohydrates (g)	0.10	0.13	-0.04	Methionine (mg)	-0.23	0.18	-0.01
Fiber (g)	-0.02	0.07	0.25	Cystine (mg)	-0.26	0.07	-0.23
Vegetable protein (g)	-0.09	0.06	-0.19	Phenylalanine (mg)	-0.21	0.18	-0.10
Animal protein (g)	-0.22	0.20	0.10	Tyrosine (mg)	-0.16	0.20	-0.09
Carbohydrates (g)	0.20	0.26 ($p = 0.020$)	0.52	Threonine (mg)	-0.21	0.15	0.01
Fructose (g)	0.15	0.17	0.61 ($p = 0.027$)	Tryptophan (mg)	-0.23	0.13	-0.07
Galactose (g)	0.06	-0.08	0.08	Valine (mg)	-0.20	0.17	-0.06
Glucose (g)	0.08	0.16	0.40	Arginine (mg)	-0.25	0.14	0.10
Lactose (g)	-0.06	0.21	0.04	Histidine (mg)	-0.18	0.15	0.06
Maltose (g)	0.14	0.10	0.17	Alanine (mg)	-0.28	0.13	0.12
Sucrose (g)	0.18	0.18	0.35	Aspartic acid (mg)	-0.26	0.13	0.20
Starch (g)	-0.09	0.04	-0.34	Glutamic acid (mg)	-0.19	0.17	-0.16
SFA (g)	-0.09	0.04	-0.34	Glycine (mg)	-0.23	0.08	0.23
MUFA (g)	-0.13	0.03	-0.37	Proline (mg)	-0.12	0.21	-0.05
n-3 fatty acids (g)	-0.11	-0.01	-0.15	Serine (mg)	-0.22	0.17	-0.05
n-6 fatty acids (g)	0.00	0.02	-0.60 ($p = 0.030$)	Vit. A (μg)	0.03	0.24 ($p = 0.033$)	0.37
PUFA (g)	0.02	-0.06	-0.49	Retinol (μg)	-0.10	0.06	-0.09
Cholesterol (mg)	0.00	-0.04	-0.56 ($p = 0.047$)	Beta carotene (μg)	-0.00	0.23 ($p = 0.046$)	0.34
Trans-fatty acids in total (g)	-0.23	0.05	0.24	Vit. D (μg)	-0.06	0.16	0.05
Sodium (mg)	-0.19	0.07	-0.19	Vit. E (mg)	0.04	0.05	-0.38
Salt (g)	-0.19	0.07	-0.19	Vit. K (μg)	-0.19	-0.04	-0.06
Potassium (mg)	-0.21	0.07	0.13	Vit. B1 (mg)	-0.23	0.02	-0.14
Calcium (mg)	-0.11	0.12	-0.35	Vit. B2 (mg)	-0.04	0.22 ($p = 0.048$)	0.14
Phosphorus (mg)	-0.21	0.16	-0.08	Vit. B3 (mg)	-0.32 ($p = 0.043$)	-0.02	0.03
Magnesium (mg)	-0.21	0.03	0.00	Vit. B6 (mg)	-0.27	0.01	-0.01
Iron (mg)	-0.25	0.06	0.18	Folates (μg)	-0.10	0.07	-0.06
Zinc (mg)	-0.20	0.11	0.25	GI	-0.34 ($p = 0.031$)	-0.26 ($p = 0.024$)	-0.23
Copper (mg)	-0.12	0.04	0.09	GL	0.09	0.05	-0.12
Manganese (mg)	0.08	0.09	0.14	Percentage of energy			
Selenium (μg)	-0.10	-0.04	-0.34	% energy from proteins	0.07	0.11	0.41
Iodine (μg)	-0.26	0.22	0.03	% energy from fats	-0.18	0.08	0.20
PRAL	0.00	0.09	-0.04	% energy from saccharides	-0.13	-0.13	-0.28

ρ – Spearman's rank correlation coefficient, n – number of paired observations, PRAL – potential renal acid load, MUFA – monounsaturated fatty acids, SFA – saturated fatty acids; bold values indicate statistically significant correlations ($p < 0.05$). [†]Exploratory analysis due to limited number of detectable IL-23 measurements

Supplementary Table 3.**A. Frequency of consumption of selected food products**

Food product	Daily, n (%)	4-5 times/week, n (%)	2-3 times/week, n (%)	Once/week, n (%)	Several times/ month, n (%)	Never, n (%)
White bread	38 (45.2)	11 (13.1)	13 (15.5)	9 (10.7)	8 (9.5)	5 (6.0)
Wholemeal bread	19 (22.6)	15 (17.9)	23 (27.4)	11 (13.1)	12 (14.3)	4 (4.8)
Pastry products	4 (4.8)	5 (6.0)	19 (22.6)	23 (27.4)	23 (27.4)	10 (11.9)
Oat, barley, rye flakes	6 (7.1)	3 (3.6)	12 (14.3)	14 (16.7)	23 (27.4)	26 (31.0)
Buckwheat, barley, millet groats	2 (2.4)	2 (2.4)	12 (14.3)	26 (31.0)	36 (42.9)	6 (7.1)
White rice	1 (1.2)	1 (1.2)	5 (6.0)	31 (36.9)	39 (46.4)	7 (8.3)
Brown rice	0 (0.0)	0 (0.0)	4 (4.8)	8 (9.5)	18 (21.4)	54 (64.3)
White pasta	0 (0.0)	1 (1.2)	14 (16.7)	40 (47.6)	26 (31.0)	3 (3.6)
Wholegrain pasta	0 (0.0)	0 (0.0)	8 (9.5)	5 (6.0)	19 (22.6)	52 (61.9)
Potatoes	6 (7.1)	21 (25.0)	33 (39.3)	15 (17.9)	6 (7.1)	3 (3.6)
Poultry	6 (7.1)	16 (19.0)	37 (44.0)	19 (22.6)	5 (6.0)	1 (1.2)
Red meat	2 (2.4)	8 (9.5)	24 (28.6)	22 (26.2)	22 (26.2)	6 (7.1)
Fish	0 (0.0)	0 (0.0)	11 (13.1)	33 (39.3)	34 (40.5)	6 (7.1)
Processed meat	13 (15.5)	29 (34.5)	24 (28.6)	4 (4.8)	13 (15.5)	1 (1.2)
Milk	28 (33.3)	13 (15.5)	19 (22.6)	9 (10.7)	7 (8.3)	8 (9.5)
Fermented dairy (plain)	9 (10.7)	10 (11.9)	25 (29.8)	13 (15.5)	20 (23.8)	7 (8.3)
Fermented dairy (fruit)	8 (9.5)	4 (4.8)	18 (21.4)	16 (19.0)	17 (20.2)	21 (25.0)
Cottage cheese	5 (6.0)	12 (14.3)	29 (34.5)	23 (27.4)	15 (17.9)	0 (0.0)
Yellow cheese	3 (3.6)	12 (14.3)	32 (38.1)	17 (20.2)	18 (21.4)	2 (2.4)
Eggs	4 (4.8)	16 (19.0)	34 (40.5)	21 (25.0)	9 (10.7)	0 (0.0)
Vegetables	31 (36.9)	21 (25.0)	21 (25.0)	6 (7.1)	4 (4.8)	1 (1.2)
Fruit	33 (39.3)	28 (33.3)	17 (20.2)	4 (4.8)	1 (1.2)	1 (1.2)
Cakes and pastries	10 (11.9)	15 (17.9)	21 (25.0)	19 (22.6)	15 (17.9)	4 (4.8)
Chocolate bars and sweets	2 (2.4)	13 (15.5)	23 (27.4)	21 (25.0)	18 (21.4)	7 (8.3)
Juices and fruit drinks	4 (4.8)	10 (11.9)	13 (15.5)	28 (33.3)	19 (22.6)	10 (11.9)
Sugar-sweetened beverages	3 (3.6)	5 (6.0)	12 (14.3)	13 (15.5)	29 (34.5)	22 (26.2)
Alcohol	0 (0.0)	2 (2.4)	7 (8.3)	14 (16.7)	39 (46.4)	22 (26.2)
Fast food	0 (0.0)	1 (1.2)	1 (1.2)	9 (10.7)	46 (54.8)	27 (32.1)

n – number of observations

B. Correlation between frequency of consumption of selected products and cytokine levels

Food product	IL-21 (pg/ml)	IL-22 (ng/ml)	IL-23 (ng/ml) [†]
	ρ	ρ	ρ
White bread	0.04	0.10	0.40
Wholemeal bread	-0.18	-0.14	-0.30
Confectionery bread	-0.22	0.03	0.22
Oat flakes, barley, rye	-0.15	-0.15	-0.12
Buckwheat, barley, millet	-0.15	-0.09	0.03
White rice	-0.08	0.07	0.40
Brown rice	-0.11	-0.21	0.19
White noodles	-0.19	0.19	0.78 ($p = 0.002$)
Wholemeal pasta	-0.31	-0.24 ($p = 0.034$)	-0.10
Potatoes	0.18	0.14	-0.25
Poultry	-0.13	0.03	0.40
Red meat	0.22	0.01	-0.24
Fish	-0.01	-0.10	-0.57 ($p = 0.042$)
Cold cuts, frankfurters, sausages	0.01	0.06	-0.20
Milk	-0.08	0.06	-0.13
Natural sour milk products	-0.04	-0.20	0.08
Sour fruit milk products	-0.12	-0.09	0.15
Cottage cheese	-0.10	-0.30 ($p = 0.007$)	-0.59 ($p = 0.035$)
Cheese	0.02	0.09	0.34
Eggs	0.03	-0.08	-0.60 ($p = 0.029$)
Vegetables	-0.15	-0.14	-0.17
Fruit	-0.13	-0.14	-0.33
Cakes, cookies	-0.08	0.05	-0.07
Bars, chocolates, chocolates	-0.15	-0.05	-0.15
Juices, nectars, fruit drinks	0.02	-0.09	-0.05
Sweetened carbonated drinks	0.13	0.24 ($p = 0.036$)	0.48
Fast-food dishes	0.05	0.25 ($p = 0.025$)	0.63 ($p = 0.020$)

ρ – Spearman's rank correlation coefficient, n – number of paired observations, bold values indicate statistically significant correlations ($p < 0.05$), [†]Exploratory analysis due to limited number of detectable IL-23 measurements