

Dietary improvement during lactation prevents early alterations in the plasma lipidome of the offspring of diet-induced obese rats by normalizing maternal milk lipid content

Supporting information

Supplementary Table 1. Energy values and nutritional composition, in term of fatty acids, of both commercial diets included in the experimental design: standard diet (SD; SAFE A04) and western diet (WD; D12079B RD Western diet, Research Diets).

Energy values	SD	WD
kcal/kg	3,339	4,700
Protein (%)	19.3	17.0
Fat (%)	8.4	41.0
Carbohydrate (%)	72.4	43.0
Nutritional composition	SD	WD
<i>Fatty acids</i>	mg/kg	mg/kg
Palmitic acid (16:0)	5,900	53,500
Palmitoleic acid (16:1)	150	4,600
Stearic acid (18:0)	600	24,500
Oleic acid (18:1)	4,800	52,700
Linoleic acid (18:2)	15,000	10,600
α -Linolenic acid (18:3)	1,200	2,900

Supplementary Table 2. Nucleotide sequences of primers used for PCR amplification

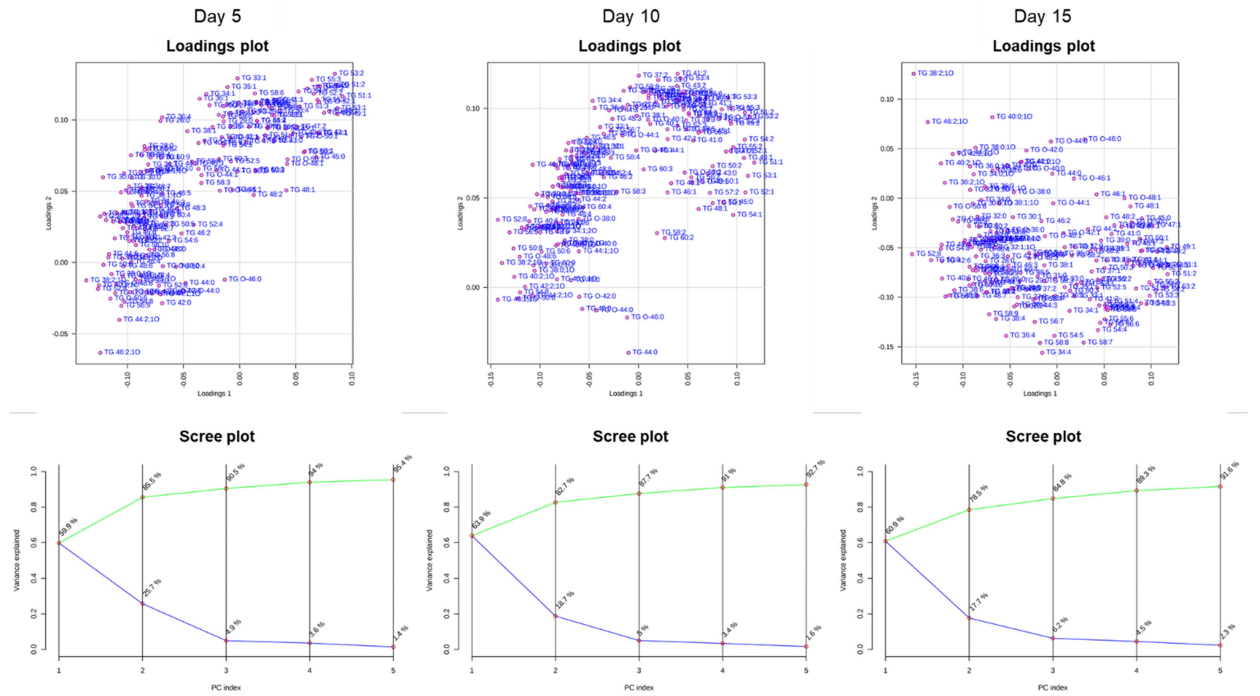
Gene	Forward primer (5' to 3')	Reverse primer (5' to 3')	Amplicon size (pb)
<i>Gdi</i>	CCGCACAAGGCAAATACATC	GACTCTCTGAACCGTCATCAA	210
<i>Srebfl</i>	CCCACCCCCTTACACACC	GCCTGCGGTCTTCATTGT	198
<i>Fasn</i>	CGGCGAGTCTATGCCACTAT	ACACAGGGACCGAGTAAT	222
<i>Acaca</i>	TGCAGGTATCCCCACTCTTC	TTCTGATTCCCTTCCCTCCT	212
<i>Pnpla2</i>	TGTGGCCTCATTCCCTCTAC	AGCCCTGTTTGACATCTCT	271
<i>Lipe</i>	TCACGCTACATAAAGGCTGCT	CCACCCGTAAAGAGGGAAGT	169
<i>Lpl</i>	TATGGCACAGTGGCTGAAAG	CTGACCAGCGGAAGTAGGAG	157
<i>Cd36</i>	GTGGCAAAGAACAGCAGCAA	CCAACAGACAGTGAAGGCTCA	161
<i>Fabp4</i>	TTGTGGGGACCTGGAAACT	TCCTGTCATCTGGGGTGATT	225
<i>Cpt1b</i>	GCAAACCTGGACCGAGAAGAG	CCTTGAAGAAGCGACCTTTG	180
<i>Insr</i>	GTCCGGCGTTCATCAGAG	CTCCTGGGATTCATGCTGTT	242
<i>Lepr</i>	AGCCAAACAAAAGCACCATT	TCCTGAGCCATCCAGTCTCT	174
<i>Adipoq</i>	GCTCAGGATGCTACTGTTG	TCTCACCCCTTAGGACCAAG	241
<i>TNF-α</i>	CCGATTTGCCATTTTCATAACC	TCGCTTCACAGAGCAATGAC	230
<i>IL-6</i>	TCAACTCCATCTGCCCTTC	TTGTGGGTGGTATCCCTCTGT	156
<i>COX-2</i>	TGATGTTTCGATTTCTTTGCC	GTGTCTTTGACTGTGGGAGGA	220

Supplementary Table 3. Pearson's correlation coefficients and the corresponding P-values between maternal milk and plasma of the offspring at lactation day 15 when analyzing partial triacylglycerol composition, in terms of both number of carbon atoms (C) and double bonds (DB), and free fatty acid profile.

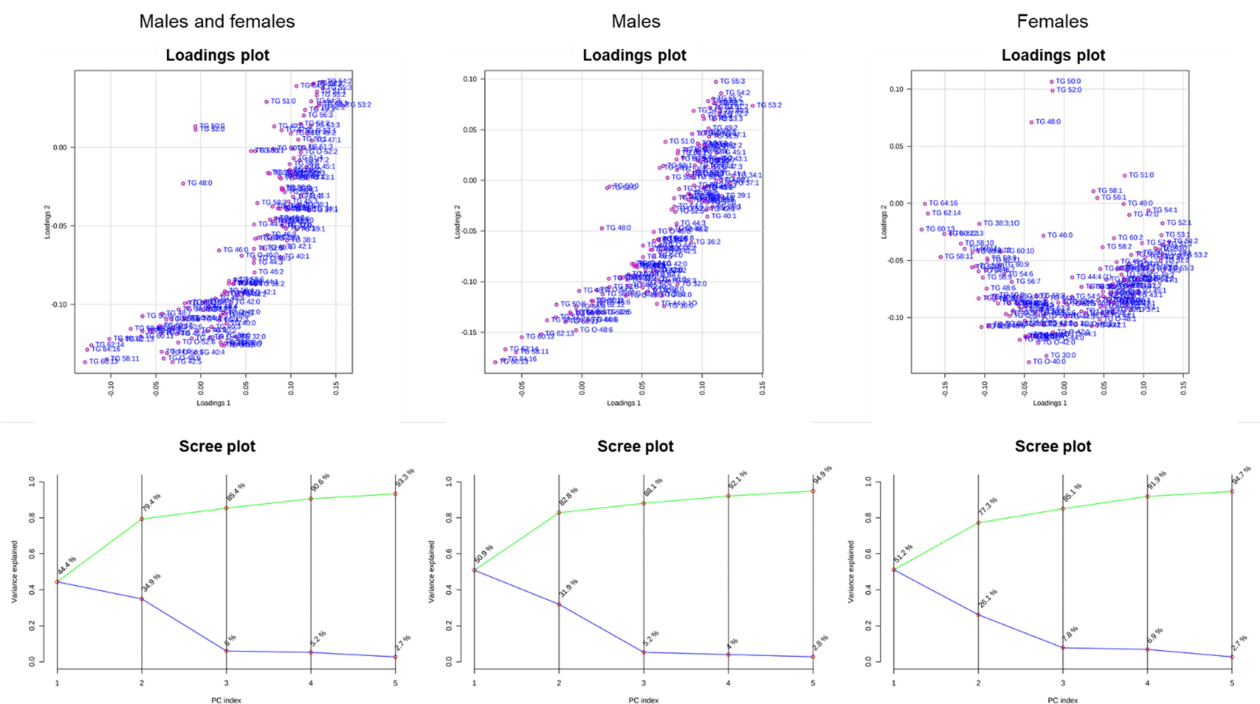
Triacylglycerol composition		Pearson's correlation coefficient	P-value
<i>In terms of number of carbon atoms</i>	30C	0.452	0.006
	32C	0.647	0.000
	34C	0.672	0.000
	36C	0.708	0.000
	38C	0.791	0.000
	40C	0.810	0.000
	42C	-0.173	0.314
	44C	-0.404	0.014
	46C	0.019	0.914
	48C	0.658	0.000
	50C	0.925	0.000
	52C	0.946	0.000
	54C	0.711	0.000
	56C	-0.284	0.093
	58C	0.138	0.423
60C	0.487	0.003	
<i>In terms of double bonds</i>	0 DB	0.922	0.000
	1 DB	0.959	0.000
	2 DB	0.822	0.000
	3 DB	0.875	0.000
	4 DB	0.646	0.000
	5 DB	0.162	0.346
	6 DB	0.618	0.000
Free fatty acid profile			
Palmitoleic acid (C16:1)	0.750	0.000	
Oleic acid (C18:1)	0.891	0.000	
Linoleic acid (LA, C18:2)	0.769	0.000	
α -Linoleic (ALA, C18:3)	0.789	0.000	
Eicosanoic acid (C20:2)	0.467	0.004	
Eicosatrienoic acid (C20:3)	0.502	0.002	
Arachidonic acid (AA, C20:4)	0.444	0.007	
Eicosapentaenoic acid (EPA, C20:5)	0.649	0.000	
Docosatetraenoic acid (C22:4)	0.306	0.069	
Docosapentaenoic acid (C22:5)	0.387	0.020	
Docosahexaenoic acid (DHA, C22:6)	0.577	0.000	
AA/(EPA+DHA) ratio	0.457	0.006	

Supplementary Figure 1. Loadings and scree plots illustrating triacylglycerols in maternal milk at lactation days 5, 10 and 15 (A) and in the plasma of male and female offspring at postnatal day 15 (B). These analyses were performed using MetaboAnalyst 5.0 software (1).

A) Maternal milk



B) Plasma of offspring at postnatal day 15



(1) Pang Z, Chong J, Zhou G, De Lima Morais DA, Chang L, Barrette M, et al. MetaboAnalyst 5.0: narrowing the gap between raw spectra and functional insights. *Nucleic Acids Res* **2021**, 49, W388–96.