

Table S1. Cytokines and adipokines concentrations in breast milk

Cytokines and adipokines (pg/mL)	Total (n=100)		
	IQR	pg/mL	% det
IL-2	0.00-0.00	0.65±2.05	11
IL-4	0.00-0.00	0.16±1.05	4
IL-5	0.00-0.00	0.18±0.67	8
IL-6	0.00-31.62	71.37±225.63	48
IL-9	0.00-0.00	0.20±1.13	5
IL-10	0.00-0.30	0.89±4.51	60
IL-12	0.00-0.10	0.30±2.31	27
IL-13	0.00-0.00	0.02±0.17	2
IL-17	0.00-0.00	0.17±0.72	7
IL-18	2.42-15.36	13.68±23.76	86
IL-21	0.38-5-05	12.39±39.08	78
IL-22	0.00-5.88	4.98±8.54	53
IL-23	0.00-0.00	0.71±1.99	14
IL-1β	0.00-1.63	9.33±50.18	39
IFN_γ	0.00-0.00	1.25±8.88	19
GM-CSF	0.00-0.00	0.10±0.82	2
TNF_α	1.66-2.44	2.38±2.50	99
Leptin	165.58-547.95	457.83±449.83	98
Adiponectin	7945.00-16810.49	14577.15±14107.66	99

Data shown are expressed as [IQR]. Detectability frequencies (% det). GM-CSF, Granulocyte Macrophage Colony-Stimulating Factor; IFN, Interferon; IL, Interleukin; TNF, tumor necrosis factor.

Table S2. Spearman correlation between Pre-gestational maternal BMI and breast milk microbiota and concentration of cytokines (n=100)

Pre-gestational maternal BMI		
Breast milk microbiota	ρ	p
<i>Streptococcus</i>	-0.08	0.427
<i>Staphylococcus</i>	0.21	0.039
<i>Acinetobacter</i>	-0.04	0.729
<i>Ralstonia</i>	-0.15	0.139
<i>Gemella</i>	0.01	0.909
Breast milk cytokines		
IL-6	0.30	0.904
IL-18	-0.15	0.139
IL-21	0.06	0.565
IL-1 β	-0.06	0.542
IL-22	0.20	0.048
TNF $_{\alpha}$	0.30	0.003

IL, Interleukin; TNF, tumor necrosis. Significances are highlighted in bold.

Table S3. Relationship between breast milk microbiota, cytokines and BMIZ at 12 months (n=100)

Breast milk microbiota and cytokines	Unadjusted analysis			Adjusted analysis*		
	β	95% CI	<i>p</i>	β	95% CI	<i>p</i>
Chao 1 index	0.24	0.007-0.041	0.007	0.025	0.007-0.042	0.006
<i>Streptococcus</i>	-0.008	-0.016-0.000	0.044	-0.008	-0.016-0.000	0.057
IL-10	-0.032	-0.070-0.006	0.096	-0.041	-0.081-0.000	0.049
IL-18	0.010	0.003-0.018	0.008	0.011	0.003-0.018	0.006

Linear regression β coefficients for BM microbiota and cytokines predicting BMIZ at 12 months (*adjusted for mode of birth, intrapartum antibiotic (ATB) and breastfeeding practices at 15 days). $p < 0.05$ was considered statistically significant. CI: confidence interval, IL: interleukin. Significances are highlighted in bold.

Table S4. The IL-6 gene expression in MCF-7 (n=20)

Condition	Relative expression (to ACTB gene)	95% CI	<i>p</i>
Control-NOROW	0.908	0.116 - 75.521	0.852
Control-ROW	1.402	0.437 - 4.075	0.217
NOROW-ROW	2.576	0.233 - 22.298	0.037

Data is presented as relative gene expression of IL-6 normalized to ACTB gene expression as house-keeping gene and the 95% confidence interval (CI). NOROW: No risk of overweight, ROW: Risk of overweight. * $p < 0.05$ was considered statistically significant. Significances are highlighted in bold.