Supplementary Information

Evaluation of the Lipid Quality of Lyophilized Pasteurized Human Milk for Six Months by GC-FID and ESI-MS

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Table S1. Acidity of colostrum, transitional and mature human milk without lyophilization, and those lyophilized and freeze stored[a] for 1, 30, 60, 90, 120, 150 and 180 days

HM	WL[a] / °Dornic	Lyophilized[b] / °Dornic						
		Day 1	Day 30	Day 60	Day 90	Day 120	Day 150	Day 180
C	4.33 ± 0.44^{A}	4.67 ± 0.89^{A}	4.67 ± 0.44^{A}	4.67 ± 0.44^{A}	4.67 ± 0.44^{A}	4.33 ± 0.44^{A}	5.00 ± 0.67^{A}	5.33 ± 0.44^{A}
T	4.00 ± 0.67^{A}	4.33 ± 0.44^{A}	4.33 ± 0.44^{A}	4.67 ± 0.44^{A}	4.67 ± 0.44^{A}	4.67 ± 0.44^{A}	5.00 ± 0.67^{A}	5.33 ± 0.44^{A}
M	3.67 ± 0.44^{A}	4.33 ± 0.44^{A}	4.67 ± 0.44^{A}	4.33 ± 0.44^{A}	4.67 ± 0.44^{A}	5.33 ± 0.44^{A}	4.67 ± 0.44^{A}	5.00 ± 0.67^{A}

[a]Vacuum packed, at –18 °C; [b]results expressed as means ± S.D (standard deviation) of three replicates. Values with same uppercase letters are not statistically different ($p < 0.05$) by Tukey's test. HM: human milk; WL: without lyophilization; C: colostrum; T: transitional; M: mature.

Table S2. Total lipids of colostrum, transitional and mature human milk without lyophilization, and those lyophilized and freeze stored[a] for 1, 30, 60, 90, 120, 150 and 180 days

HM	WL[a] / %	Lyophilized[b] / %						
		Day 1	Day 30	Day 60	Day 90	Day 120	Day 150	Day 180
C	3.23 ± 1.01^{A}	3.22 ± 0.32^{A}	3.36 ± 0.08^{A}	3.16 ± 0.35^{A}	3.31 ± 0.46^{A}	3.32 ± 0.62^{A}	3.36 ± 0.55^{A}	3.50 ± 0.29^{A}
T	3.66 ± 0.69^{A}	3.70 ± 0.74^{A}	3.75 ± 0.05^{A}	3.65 ± 0.57^{A}	3.35 ± 0.43^{A}	3.50 ± 0.41^{A}	3.37 ± 0.59^{A}	3.24 ± 0.37^{A}
M	3.42 ± 0.67^{A}	3.31 ± 0.43^{A}	3.69 ± 0.46^{A}	3.55 ± 0.26^{A}	3.57 ± 0.54^{A}	3.50 ± 0.62^{A}	3.71 ± 0.60^{A}	3.38 ± 0.21^{A}

[a]Vacuum packed, at –18 °C; [b]results expressed as means ± S.D (standard deviation) of three replicates. Values with same uppercase letters are not statistically different ($p < 0.05$) by Tukey's test. HM: human milk; WL: without lyophilization; C: colostrum; T: transitional; M: mature.

Table S3. Fatty acid composition of the colostrum human milk before lyophilization (C0), and of the lyophilized colostrum samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (CL0 to CL180)

Fatty acid composition[b]	C0 / %	CL0 / %	CL30 / %	CL60 / %	CL90 / %	CL120 / %	CL150 / %	CL180 / %
10:0	1.23 ± 0.03^{A}	1.22 ± 0.08^{A}	1.21 ± 0.10^{A}	1.18 ± 0.08^{A}	1.14 ± 0.05^{A}	1.16 ± 0.02^{A}	1.18 ± 0.08^{A}	1.21 ± 0.05^{A}
12:0	7.13 ± 0.07^{A}	7.13 ± 0.07^{A}	6.95 ± 0.20^{A}	7.27 ± 0.06^{A}	7.03 ± 0.10^{A}	6.95 ± 0.25^{A}	6.94 ± 0.25^{A}	6.89 ± 0.10^{A}
14:0	8.18 ± 0.08^{A}	8.18 ± 0.23^{A}	8.15 ± 0.02^{A}	8.18 ± 0.09^{A}	8.09 ± 0.09^{A}	7.94 ± 0.13^{A}	8.02 ± 0.19^{A}	8.08 ± 0.03^{A}
14:1	0.11 ± 0.06^{A}	0.11 ± 0.06^{A}	0.11 ± 0.07^{A}	0.11 ± 0.05^{A}	0.12 ± 0.09^{A}	0.11 ± 0.07^{A}	0.11 ± 0.07^{A}	0.11 ± 0.06^{A}
15:0	0.25 ± 0.04^{A}	0.25 ± 0.05^{A}	0.25 ± 0.02^{A}	0.24 ± 0.12^{A}	0.26 ± 0.05^{A}	0.24 ± 0.02^{A}	0.24 ± 0.02^{A}	0.25 ± 0.03^{A}
16:0	23.03 ± 0.16^{A}	23.23 ± 0.22^{A}	23.24 ± 0.16^{A}	23.07 ± 0.13^{A}	23.19 ± 0.18^{A}	22.94 ± 0.46^{A}	22.89 ± 0.10^{A}	23.31 ± 0.13^{A}
16:1	1.93 ± 0.024^{A}	1.91 ± 0.11^{A}	1.95 ± 0.05^{A}	1.95 ± 0.05^{A}	1.93 ± 0.06^{A}	1.87 ± 0.03^{A}	1.91 ± 0.07^{A}	1.88 ± 0.05^{A}
17:0	0.33 ± 0.01^{A}	0.33 ± 0.02^{A}	0.30 ± 0.01^{A}	0.32 ± 0.01^{A}	0.33 ± 0.01^{A}	0.31 ± 0.01^{A}	0.34 ± 0.00^{A}	0.34 ± 0.01^{A}
17:1	0.17 ± 0.02^{A}	0.17 ± 0.02^{A}	0.18 ± 0.02^{A}	0.15 ± 0.03^{A}	0.15 ± 0.01^{A}	0.17 ± 0.04^{A}	0.18 ± 0.02^{A}	0.17 ± 0.05^{A}
18:0	5.54 ± 0.06^{A}	5.76 ± 0.19^{A}	5.60 ± 0.02^{A}	5.55 ± 0.27^{A}	5.56 ± 0.23^{A}	5.86 ± 0.27^{A}	5.94 ± 0.04^{A}	5.88 ± 0.06^{A}
18:1n-9	29.47 ± 0.75^{A}	29.30 ± 0.02^{A}	29.72 ± 0.03^{A}	29.73 ± 0.18^{A}	29.78 ± 0.04^{A}	30.00 ± 0.15^{A}	29.79 ± 0.27^{A}	29.76 ± 0.31^{A}
18:2n-6	17.90 ± 0.42^{A}	17.81 ± 0.15^{A}	17.90 ± 0.43^{A}	17.69 ± 0.28^{A}	17.91 ± 0.59^{A}	17.86 ± 0.21^{A}	17.80 ± 0.27^{A}	17.50 ± 0.04^{A}
18:3n-3	1.10 ± 0.09^{A}	1.09 ± 0.08^{A}	1.10 ± 0.05^{A}	1.12 ± 0.09^{A}	1.05 ± 0.09^{A}	1.05 ± 0.11^{A}	1.14 ± 0.14^{A}	1.10 ± 0.13^{A}
20:0	0.14 ± 0.01^{A}	0.14 ± 0.00^{A}	0.13 ± 0.02^{A}	0.14 ± 0.01^{A}	0.14 ± 0.01^{A}	0.14 ± 0.00^{A}	0.15 ± 0.01^{A}	0.15 ± 0.03^{A}
20:1n-9	0.40 ± 0.01^{A}	0.40 ± 0.01^{A}	0.40 ± 0.04^{A}	0.39 ± 0.03^{A}	0.38 ± 0.02^{A}	0.40 ± 0.02^{A}	0.43 ± 0.03^{A}	0.43 ± 0.02^{A}
20:3n-3	0.70 ± 0.02^{A}	0.67 ± 0.02^{A}	0.68 ± 0.05^{A}	0.67 ± 0.04^{A}	0.70 ± 0.05^{A}	0.70 ± 0.02^{A}	0.71 ± 0.01^{A}	0.65 ± 0.04^{A}
20:3n-6	0.61 ± 0.01^{A}	0.58 ± 0.03^{A}	0.57 ± 0.03^{A}	0.58 ± 0.04^{A}	0.56 ± 0.04^{A}	0.64 ± 0.05^{A}	0.60 ± 0.02^{A}	0.61 ± 0.02^{A}
20:4n-6	0.10 ± 0.01^{A}	0.10 ± 0.00^{A}	0.10 ± 0.01^{A}	0.09 ± 0.05^{A}	0.09 ± 0.03^{A}	0.10 ± 0.05^{A}	0.10 ± 0.03^{A}	0.10 ± 0.04^{A}
20:5n-3	0.04 ± 0.02^{A}	0.04 ± 0.02^{A}	0.04 ± 0.00^{A}	0.04 ± 0.02^{A}	0.03 ± 0.01^{A}	0.03 ± 0.01^{A}	0.04 ± 0.01^{A}	0.04 ± 0.00^{A}
21:0	0.80 ± 0.01^{A}	0.74 ± 0.02^{A}	0.65 ± 0.03^{A}	0.73 ± 0.01^{A}	0.71 ± 0.02^{A}	0.74 ± 0.04^{A}	0.75 ± 0.04^{A}	0.76 ± 0.03^{A}
22:0	0.13 ± 0.01^{A}	0.10 ± 0.02^{A}	0.11 ± 0.03^{A}	0.12 ± 0.01^{A}	0.13 ± 0.02^{A}	0.14 ± 0.01^{A}	0.14 ± 0.03^{A}	0.14 ± 0.01^{A}
22:1n-9	0.11 ± 0.01^{A}	0.10 ± 0.02^{A}	0.09 ± 0.03^{A}	0.09 ± 0.01^{A}	0.10 ± 0.02^{A}	0.12 ± 0.03^{A}	0.11 ± 0.01^{A}	0.11 ± 0.01^{A}
22:6n-3	0.24 ± 0.01^{A}	0.24 ± 0.03^{A}	0.24 ± 0.01^{A}	0.24 ± 0.00^{A}	0.23 ± 0.01^{A}	0.24 ± 0.06^{A}	0.23 ± 0.04^{A}	0.23 ± 0.05^{A}

Table S3. Fatty acid composition of the colostrum human milk before lyophilization (C0), and of the lyophilized colostrum samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (CL0 to CL180) (cont.)

Fatty acid composition[b]	C0 / %	CL0 / %	CL30 / %	CL60 / %	CL90 / %	CL120 / %	CL150 / %	CL180 / %
24:0	0.29 ± 0.04^{A}	0.29 ± 0.02^{A}	0.27 ± 0.02^{A}	0.27 ± 0.03^{A}	0.28 ± 0.03^{A}	0.28 ± 0.01^{A}	0.27 ± 0.01^{A}	0.27 ± 0.02^{A}
24:1n-9	0.15 ± 0.02^{A}	0.15 ± 0.01^{A}	0.13 ± 0.01^{A}	0.14 ± 0.02^{A}	0.15 ± 0.01^{A}	0.15 ± 0.01^{A}	0.15 ± 0.02^{A}	0.16 ± 0.01^{A}
Σ(n-3)	2.08 ± 0.09^{A}	2.04 ± 0.11^{A}	2.06 ± 0.08^{A}	2.06 ± 0.10^{A}	2.01 ± 0.07^{A}	2.02 ± 0.07^{A}	2.12 ± 0.20^{A}	2.02 ± 0.10^{A}
Σ(n-6)	18.58 ± 0.13^{A}	18.45 ± 0.18^{A}	18.53 ± 0.28^{A}	18.33 ± 0.21^{A}	18.54 ± 0.45^{A}	18.56 ± 0.24^{A}	18.47 ± 0.09^{A}	18.18 ± 0.07^{A}
Σ(n-6)/(n-3)	8.95 ± 0.31^{A}	9.05 ± 0.52^{A}	9.01 ± 0.43^{A}	8.91 ± 0.47^{A}	9.55 ± 0.22^{A}	9.18 ± 0.41^{A}	8.72 ± 0.31^{A}	9.02 ± 0.50^{A}
ΣPUFA	20.65 ± 0.34^{A}	20.49 ± 0.09^{A}	20.58 ± 0.46^{A}	20.39 ± 0.33^{A}	20.55 ± 0.67^{A}	20.59 ± 0.25^{A}	20.58 ± 0.39^{A}	20.20 ± 0.15^{A}
ΣMUFA	36.41 ± 0.74^{A}	36.26 ± 0.27^{A}	36.67 ± 0.07^{A}	36.60 ± 0.13^{A}	36.72 ± 0.06^{A}	36.89 ± 0.16^{A}	36.73 ± 0.24^{A}	36.78 ± 0.29^{A}
ΣSFA	43.01 ± 0.18^{A}	43.25 ± 0.40^{A}	42.75 ± 0.40^{A}	43.07 ± 0.25^{A}	42.76 ± 0.38^{A}	42.57 ± 0.35^{A}	42.73 ± 0.49^{A}	43.08 ± 0.07^{A}

[a]Vacuum packed, at –18 °C; [b]results expressed as means ± SD (standard deviation) of three replicates. Values with same uppercase letters are not statistically different ($p < 0.05$) by Tukey's test. Fatty acids composition: capric acid (10:0); lauric acid (12:0); myristic acid (14:0); myristoleic acid (14:1); pentadecylic acid (15:0); palmitic acid (16:0); palmitoleic acid (16:1); margaric acid (17:0); heptadecenoic acid (17:1); stearic acid (18:0); oleic acid (18:1n-9); linoleic acid (18:2n-6); linolenic acid (18:3n-3); arachidic acid (20:0); eicosenoic acid (20:1n-9); eicosatrienoic acid (20:3n-3); dihomo-gamma-linolenic acid (20:3n-6); arachidonic acid (20:4n-6); eicosapentaenoic acid (20:5n-3); heneicosylic acid (21:0); behenic acid (22:0); erucic acid (22:1n-9); docosahexaenoic acid (22:6n-3); lignoceric acid (24:0); nervonic acid (24:1n-9); omega-3 (n-3); omega-6 (n-6); omega-6/omega-3 ratios (n-6)/(n-3); saturated fatty acids (SFA); monounsaturated fatty acids (MUFA); polyunsaturated fatty acids (PUFA).

Table S4. Fatty acid composition of the transitional human milk before lyophilization (T0), and of the lyophilized transitional samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (TL0 to TL180)

Fatty acid composition[b]	T0 / %	TL0 / %	TL30 / %	TL60 / %	TL90 / %	TL120 / %	TL150 / %	TL180 / %
10:0	1.74 ± 0.04^{A}	1.74 ± 0.02^{A}	1.75 ± 0.00^{A}	1.74 ± 0.02^{A}	1.74 ± 0.02^{A}	1.72 ± 0.01^{A}	1.73 ± 0.01^{A}	1.70 ± 0.01^{A}
12:0	8.68 ± 0.04^{A}	8.66 ± 0.16^{A}	8.61 ± 0.03^{A}	8.64 ± 0.29^{A}	8.65 ± 0.28^{A}	8.70 ± 0.28^{A}	8.68 ± 0.25^{A}	8.70 ± 0.39^{A}
14:0	8.35 ± 0.05^{A}	8.35 ± 0.09^{A}	8.30 ± 0.12^{A}	8.35 ± 0.17^{A}	8.35 ± 0.19^{A}	8.38 ± 0.40^{A}	8.36 ± 0.38^{A}	8.35 ± 0.26^{A}
14:1	0.13 ± 0.08^{A}	0.14 ± 0.08^{A}	0.13 ± 0.08^{A}	0.13 ± 0.08^{A}	0.16 ± 0.08^{A}	0.13 ± 0.08^{A}	0.14 ± 0.09^{A}	0.14 ± 0.09^{A}
15:0	0.22 ± 0.00^{A}	0.22 ± 0.01^{A}	0.21 ± 0.01^{A}	0.21 ± 0.01^{A}	0.21 ± 0.00^{A}	0.22 ± 0.01^{A}	0.21 ± 0.01^{A}	0.22 ± 0.01^{A}
16:0	21.29 ± 0.11^{A}	21.21 ± 0.08^{A}	21.20 ± 0.19^{A}	21.17 ± 0.06^{A}	21.14 ± 1.02^{A}	21.19 ± 0.01^{A}	21.19 ± 0.04^{A}	21.13 ± 1.24^{A}
16:1	2.09 ± 0.03^{A}	2.08 ± 0.07^{A}	2.08 ± 0.06^{A}	2.08 ± 0.03^{A}	2.03 ± 0.04^{A}	2.05 ± 0.02^{A}	2.02 ± 0.00^{A}	2.00 ± 0.00^{A}
17:0	0.29 ± 0.00^{A}	0.28 ± 0.03^{A}	0.29 ± 0.02^{A}	0.29 ± 0.03^{A}	0.29 ± 0.01^{A}	0.29 ± 0.01^{A}	0.30 ± 0.01^{A}	0.31 ± 0.01^{A}
17:1	0.16 ± 0.01^{A}	0.16 ± 0.00^{A}	0.16 ± 0.00^{A}	0.16 ± 0.00^{A}	0.17 ± 0.00^{A}	0.17 ± 0.00^{A}	0.16 ± 0.00^{A}	0.16 ± 0.00^{A}
18:0	6.34 ± 0.05^{A}	6.31 ± 0.01^{A}	6.31 ± 0.01^{A}	6.31 ± 0.04^{A}	6.22 ± 0.09^{A}	6.22 ± 0.10^{A}	6.23 ± 0.08^{A}	6.23 ± 0.08^{A}
18:1n-9	29.30 ± 0.02^{A}	30.03 ± 0.08^{A}	30.00 ± 0.04^{A}	30.01 ± 0.07^{A}	30.02 ± 0.08^{A}	29.99 ± 0.09^{A}	30.00 ± 0.10^{A}	29.86 ± 0.02^{A}
18:2n-6	18.00 ± 0.06^{A}	18.00 ± 0.06^{A}	18.00 ± 0.06^{A}	17.99 ± 0.07^{A}	18.00 ± 0.02^{A}	18.01 ± 0.04^{A}	18.00 ± 0.02^{A}	17.99 ± 0.06^{A}
18:3n-3	1.10 ± 0.01^{A}	1.04 ± 0.04^{A}	1.05 ± 0.04^{A}	1.09 ± 0.01^{A}	1.07 ± 0.01^{A}	1.09 ± 0.01^{A}	1.05 ± 0.02^{A}	1.08 ± 0.03^{A}
20:0	0.11 ± 0.01^{A}	0.12 ± 0.00^{A}	0.12 ± 0.00^{A}	0.12 ± 0.00^{A}	0.12 ± 0.00^{A}	0.12 ± 0.00^{A}	0.12 ± 0.01^{A}	0.12 ± 0.01^{A}
20:1n-9	0.35 ± 0.02^{A}	0.35 ± 0.01^{A}	0.36 ± 0.01^{A}	0.35 ± 0.03^{A}	0.35 ± 0.01^{A}	0.35 ± 0.01^{A}	0.32 ± 0.01^{A}	0.32 ± 0.02^{A}
20:3n-3	0.48 ± 0.03^{A}	0.46 ± 0.03^{A}	0.48 ± 0.03^{A}	0.55 ± 0.03^{A}	0.54 ± 0.02^{A}	0.53 ± 0.01^{A}	0.53 ± 0.00^{A}	0.53 ± 0.02^{A}
20:3n-6	0.36 ± 0.05^{A}	0.38 ± 0.07^{A}	0.38 ± 0.04^{A}	0.40 ± 0.03^{A}	0.39 ± 0.03^{A}	0.38 ± 0.01^{A}	0.40 ± 0.01^{A}	0.40 ± 0.04^{A}
20:4n-6	0.07 ± 0.01^{A}	0.06 ± 0.00^{A}	0.06 ± 0.01^{A}	0.06 ± 0.01^{A}	0.07 ± 0.01^{A}	0.06 ± 0.00^{A}	0.07 ± 0.00^{A}	0.07 ± 0.01^{A}
20:5n-3	0.03 ± 0.01^{A}	0.04 ± 0.00^{A}	0.03 ± 0.01^{A}	0.04 ± 0.01^{A}	0.03 ± 0.05^{A}	0.03 ± 0.00^{A}	0.03 ± 0.01^{A}	0.03 ± 0.01^{A}
21:0	0.59 ± 0.01^{A}	0.59 ± 0.02^{A}	0.56 ± 0.03^{A}	0.60 ± 0.10^{A}	0.64 ± 0.03^{A}	0.63 ± 0.02^{A}	0.61 ± 0.06^{A}	0.63 ± 0.03^{A}
22:0	0.11 ± 0.01^{A}	0.11 ± 0.01^{A}	0.10 ± 0.02^{A}	0.08 ± 0.00^{A}	0.10 ± 0.01^{A}	0.09 ± 0.00^{A}	0.09 ± 0.00^{A}	0.10 ± 0.01^{A}
22:1n-9	0.11 ± 0.02^{A}	0.12 ± 0.01^{A}	0.11 ± 0.01^{A}	0.12 ± 0.00^{A}	0.09 ± 0.02^{A}	0.09 ± 0.01^{A}	0.09 ± 0.00^{A}	0.10 ± 0.01^{A}
22:6n-3	0.16 ± 0.00^{A}	0.17 ± 0.01^{A}	0.17 ± 0.00^{A}	0.17 ± 0.00^{A}	0.16 ± 0.00^{A}	0.17 ± 0.00^{A}	0.17 ± 0.00^{A}	0.17 ± 0.01^{A}

Table S4. Fatty acid composition of the transitional human milk before lyophilization (T0), and of the lyophilized transitional samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (TL0 to TL180) (cont.)

Fatty acid composition[b]	T0 / %	TL0 / %	TL30 / %	TL60 / %	TL90 / %	TL120 / %	TL150 / %	TL180 / %
24:0	0.19 ± 0.05^{A}	0.19 ± 0.09^{A}	0.19 ± 0.03^{A}	0.20 ± 0.01^{A}	0.20 ± 0.01^{A}	0.19 ± 0.02^{A}	0.18 ± 0.01^{A}	0.19 ± 0.03^{A}
24:1n-9	0.13 ± 0.01^{A}	0.12 ± 0.01^{A}	0.13 ± 0.00^{A}	0.13 ± 0.02^{A}	0.13 ± 0.00^{A}	0.13 ± 0.00^{A}	0.13 ± 0.00^{A}	0.13 ± 0.00^{A}
Σ(n-3)	1.98 ± 0.03^{A}	1.91 ± 0.06^{A}	1.92 ± 0.06^{A}	1.97 ± 0.04^{A}	1.96 ± 0.01^{A}	1.98 ± 0.02^{A}	1.95 ± 0.02^{A}	1.92 ± 0.03^{A}
Σ(n-6)	18.42 ± 0.04^{A}	18.44 ± 0.10^{A}	18.44 ± 0.08^{A}	18.49 ± 0.10^{A}	18.49 ± 0.02^{A}	18.48 ± 0.04^{A}	18.49 ± 0.01^{A}	18.48 ± 0.08^{A}
Σ(n-6)/(n-3)	9.28 ± 0.12^{A}	9.63 ± 0.23^{A}	9.66 ± 0.04^{A}	9.40 ± 0.15^{A}	9.45 ± 0.02^{A}	9.32 ± 0.03^{A}	9.49 ± 0.06^{A}	9.66 ± 0.12^{A}
ΣPUFA	20.40 ± 0.06^{A}	20.36 ± 0.14^{A}	20.36 ± 0.05^{A}	20.45 ± 0.15^{A}	20.45 ± 0.05^{A}	20.47 ± 0.04^{A}	20.44 ± 0.03^{A}	20.40 ± 0.14^{A}
ΣMUFA	36.52 ± 0.01^{A}	36.53 ± 0.03^{A}	36.50 ± 0.08^{A}	36.50 ± 0.05^{A}	36.47 ± 0.11^{A}	36.46 ± 0.10^{A}	36.43 ± 0.08^{AB}	36.27 ± 0.03^{B}
ΣSFA	43.09 ± 0.02^{A}	43.12 ± 0.23^{A}	43.20 ± 0.08^{A}	43.08 ± 0.59^{A}	43.12 ± 0.43^{A}	43.09 ± 0.56^{A}	43.12 ± 0.49^{A}	43.42 ± 0.18^{A}

[a]Vacuum packed, at –18 °C; [b]results expressed as means ± SD (standard deviation) of three replicates. Values with same uppercase letters are not statistically different ($p < 0.05$) by Tukey's test. Fatty acids composition: capric acid (10:0); lauric acid (12:0); myristic acid (14:0); myristoleic acid (14:1); pentadecylic acid (15:0); palmitic acid (16:0); palmitoleic acid (16:1); margaric acid (17:0); heptadecenoic acid (17:1); stearic acid (18:0); oleic acid (18:1n-9); linoleic acid (18:2n-6); linolenic acid (18:3n-3); arachidic acid (20:0); eicosenoic acid (20:1n-9); eicosatrienoic acid (20:3n-3); dihomo-gamma-linolenic acid (20:3n-6); arachidonic acid (20:4n-6); eicosapentaenoic acid (20:5n-3); heneicosylic acid (21:0); behenic acid (22:0); erucic acid (22:1n-9); docosahexaenoic acid (22:6n-3); lignoceric acid (24:0); nervonic acid (24:1n-9); omega-3 (n-3); omega-6 (n-6); omega-6/omega-3 ratios (n-6)/(n-3); saturated fatty acids (SFA); monounsaturated fatty acids (MUFA); polyunsaturated fatty acids (PUFA).

Table S5. Fatty acid composition of the mature human milk before lyophilization (M0), and of the lyophilized mature human milk pool samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (ML0 to ML180)

Fatty acid composition[b]	M0 / %	ML0 / %	ML30 / %	ML60 / %	ML90 / %	ML120 / %	ML150 / %	ML180 / %
10:0	1.45 ± 0.06^{A}	1.42 ± 0.06^{A}	1.44 ± 0.045^{A}	1.53 ± 0.05^{A}	1.42 ± 0.06^{A}	1.42 ± 0.09^{A}	1.45 ± 0.08^{A}	1.38 ± 0.02^{A}
12:0	7.21 ± 0.03^{A}	7.20 ± 0.02^{A}	7.1 ± 0.02^{A}	7.34 ± 0.15^{A}	7.22 ± 0.01^{A}	7.29 ± 0.04^{A}	7.25 ± 0.02^{A}	7.25 ± 0.06^{A}
14:0	7.05 ± 0.03^{A}	7.10 ± 0.05^{A}	6.99 ± 0.01^{A}	6.98 ± 0.08^{A}	6.98 ± 0.11^{A}	6.96 ± 0.02^{A}	6.99 ± 0.08^{A}	6.97 ± 0.03^{A}
14:1	0.13 ± 0.08^{A}	0.13 ± 0.08^{A}	0.14 ± 0.08^{A}	0.14 ± 0.08^{A}	0.15 ± 0.09^{A}	0.14 ± 0.09^{A}	0.13 ± 0.07^{A}	0.13 ± 0.08^{A}
15:0	0.26 ± 0.01^{A}	0.25 ± 0.00^{A}	0.25 ± 0.01^{A}	0.25 ± 0.00^{A}	0.25 ± 0.01^{A}	0.24 ± 0.01^{A}	0.25 ± 0.00^{A}	0.26 ± 0.01^{A}
16:0	22.17 ± 0.19^{A}	22.10 ± 0.09^{A}	22.09 ± 0.10^{A}	21.94 ± 0.07^{A}	22.04 ± 0.08^{A}	22.02 ± 0.20^{A}	22.03 ± 0.19^{A}	22.13 ± 0.11^{A}
16:1	2.01 ± 0.02^{A}	2.03 ± 0.05^{A}	2.01 ± 0.08^{A}	2.09 ± 0.16^{A}	2.03 ± 0.09^{A}	2.04 ± 0.12^{A}	1.98 ± 0.06^{A}	1.94 ± 0.06^{A}
17:0	0.33 ± 0.03^{A}	0.33 ± 0.02^{A}	0.33 ± 0.01^{A}	0.30 ± 0.02^{A}	0.32 ± 0.01^{A}	0.30 ± 0.01^{A}	0.31 ± 0.02^{A}	0.30 ± 0.01^{A}
17:1	0.19 ± 0.00^{A}	0.18 ± 0.01^{A}	0.18 ± 0.02^{A}	0.20 ± 0.01^{A}	0.18 ± 0.02^{A}	0.19 ± 0.01^{A}	0.21 ± 0.01^{A}	0.20 ± 0.02^{A}
18:0	6.54 ± 0.05^{A}	6.41 ± 0.09^{A}	6.43 ± 0.00^{A}	6.47 ± 0.05^{A}	6.44 ± 0.04^{A}	6.41 ± 0.03^{A}	6.46 ± 0.04^{A}	6.54 ± 0.04^{A}
18:1n-9	29.98 ± 0.15^{A}	29.94 ± 0.28^{A}	30.03 ± 0.09^{A}	30.07 ± 0.08^{A}	30.07 ± 0.10^{A}	30.04 ± 0.16^{A}	30.02 ± 0.13^{A}	30.03 ± 0.14^{A}
18:2n-6	19.25 ± 0.04^{A}	19.46 ± 0.15^{A}	19.37 ± 0.13^{A}	19.57 ± 0.08^{A}	19.40 ± 0.14^{A}	19.44 ± 0.15^{A}	19.49 ± 0.19^{A}	19.39 ± 0.12^{A}
18:3n-3	1.18 ± 0.02^{A}	1.23 ± 0.09^{A}	1.30 ± 0.08^{A}	1.26 ± 0.09^{A}	1.24 ± 0.10^{A}	1.29 ± 0.10^{A}	1.26 ± 0.12^{A}	1.21 ± 0.08^{A}
20:0	0.14 ± 0.01^{A}	0.14 ± 0.00^{A}	0.15 ± 0.02^{A}	0.14 ± 0.01^{A}	0.14 ± 0.01^{A}	0.14 ± 0.02^{A}	0.14 ± 0.01^{A}	0.15 ± 0.01^{A}
20:1n-9	0.29 ± 0.04^{A}	0.29 ± 0.05^{A}	0.28 ± 0.08^{A}	0.32 ± 0.03^{A}	0.29 ± 0.01^{A}	0.30 ± 0.07^{A}	0.30 ± 0.01^{A}	0.29 ± 0.01^{A}
20:3n-3	0.49 ± 0.00^{A}	0.48 ± 0.00^{A}	0.48 ± 0.01^{A}	0.47 ± 0.01^{A}	0.48 ± 0.01^{A}	0.49 ± 0.01^{A}	0.47 ± 0.01^{A}	0.48 ± 0.01^{A}
20:3n-6	0.38 ± 0.00^{A}	0.35 ± 0.02^{A}	0.36 ± 0.02^{A}	0.39 ± 0.01^{A}	0.39 ± 0.01^{A}	0.37 ± 0.03^{A}	0.36 ± 0.02^{A}	0.38 ± 0.02^{A}
20:4n- 6	0.05 ± 0.01^{A}	0.05 ± 0.00^{A}	0.05 ± 0.00^{A}	0.05 ± 0.00^{A}	0.05 ± 0.00^{A}	0.05 ± 0.00^{A}	0.06 ± 0.00^{A}	0.05 ± 0.00^{A}
20:5n-3	0.02 ± 0.00^{A}	0.03 ± 0.00^{A}	0.03 ± 0.00^{A}	0.03 ± 0.00^{A}	0.03 ± 0.00^{A}	0.03 ± 0.00^{A}	0.03 ± 0.00^{A}	0.03 ± 0.00^{A}
21:0	0.40 ± 0.01^{A}	0.39 ± 0.01^{A}	0.38 ± 0.01^{A}	0.39 ± 0.01^{A}	0.40 ± 0.00^{A}	0.39 ± 0.01^{A}	0.38 ± 0.01^{A}	0.40 ± 0.01^{A}
22:0	0.10 ± 0.01^{A}	0.09 ± 0.01^{A}	0.09 ± 0.01^{A}	0.10 ± 0.01^{A}	0.11 ± 0.01^{A}	0.10 ± 0.01^{A}	0.10 ± 0.01^{A}	0.11 ± 0.01^{A}
22:1n-9	0.07 ± 0.00^{A}	0.08 ± 0.00^{A}	0.08 ± 0.01^{A}	0.07 ± 0.00^{A}	0.08 ± 0.01^{A}	0.07 ± 0.01^{A}	0.08 ± 0.00^{A}	0.08 ± 0.00^{A}
22:6n-3	0.12 ± 0.00^{A}	0.11 ± 0.01^{A}	0.12 ± 0.01^{A}	0.12 ± 0.00^{A}	0.12 ± 0.00^{A}	0.12 ± 0.01^{A}	0.12 ± 0.01^{A}	0.12 ± 0.01^{A}

Table S5. Fatty acid composition of the mature human milk before lyophilization (M0), and of the lyophilized mature human milk pool samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (ML0 to ML180) (cont.)

Fatty acid composition[b]	M0 / %	ML0 / %	ML30 / %	ML60 / %	ML90 / %	ML120 / %	ML150 / %	ML180 / %
24:0	0.11 ± 0.00^{A}	0.11 ± 0.00^{A}	0.10 ± 0.01^{A}	0.11 ± 0.01^{A}	0.11 ± 0.00^{A}	0.10 ± 0.01^{A}	0.10 ± 0.01^{A}	0.10 ± 0.01^{A}
24:1n-9	0.11 ± 0.00^{A}	0.11 ± 0.00^{A}	0.11 ± 0.01^{A}	0.10 ± 0.01^{A}	0.11 ± 0.00^{A}	0.11 ± 0.01^{A}	0.10 ± 0.00^{A}	0.10 ± 0.00^{A}
Σ(n-3)	1.81 ± 0.02^{A}	1.90 ± 0.08^{A}	1.93 ± 0.09^{A}	1.88 ± 0.07^{A}	1.87 ± 0.11^{A}	1.92 ± 0.10^{A}	1.88 ± 0.11^{A}	1.84 ± 0.06^{A}
Σ(n-6)	19.68 ± 0.02^{A}	19.85 ± 0.15^{A}	19.78 ± 0.09^{A}	20.01 ± 0.10^{A}	19.85 ± 0.08^{A}	19.87 ± 0.18^{A}	19.90 ± 0.23^{A}	19.82 ± 0.02^{A}
Σ(n-6)/(n-3)	10.85 ± 0.03^{A}	10.44 ± 0.31^{A}	10.27 ± 0.58^{A}	10.67 ± 0.45^{A}	10.66 ± 0.51^{A}	10.37 ± 0.61^{A}	10.61 ± 0.62^{A}	10.75 ± 0.24^{A}
ΣPUFA	21.50 ± 0.05^{A}	21.75 ± 0.20^{A}	21.70 ± 0.20^{A}	21.88 ± 0.12^{A}	21.72 ± 0.23^{A}	21.78 ± 0.21^{A}	21.78 ± 0.24^{A}	21.66 ± 0.19^{A}
ΣMUFA	36.59 ± 0.10^{A}	36.54 ± 0.19^{A}	36.62 ± 0.06^{A}	36.70 ± 0.20^{A}	36.69 ± 0.16^{A}	36.64 ± 0.25^{A}	36.62 ± 0.17^{A}	36.63 ± 0.14^{A}
ΣSFA	42.01 ± 0.11^{A}	41.75 ± 0.07^{A}	41.72 ± 0.08^{A}	41.45 ± 0.11^{A}	41.63 ± 0.20^{A}	41.61 ± 0.15^{A}	41.68 ± 0.28^{A}	41.72 ± 0.06^{A}

[a]Vacuum packed, at –18 °C; [b]results expressed as means ± SD (standard deviation) of three replicates. Values with same uppercase letters are not statistically different ($p < 0.05$) by Tukey's test. Fatty acids composition: capric acid (10:0); lauric acid (12:0); myristic acid (14:0); myristoleic acid (14:1); pentadecylic acid (15:0); palmitic acid (16:0); palmitoleic acid (16:1); margaric acid (17:0); heptadecenoic acid (17:1); stearic acid (18:0); oleic acid (18:1n-9); linoleic acid (18:2n-6); linolenic acid (18:3n-3); arachidic acid (20:0); eicosenoic acid (20:1n-9); eicosatrienoic acid (20:3n-3); dihomo-gamma-linolenic acid (20:3n-6); arachidonic acid (20:4n-6); eicosapentaenoic acid (20:5n-3); heneicosylic acid (21:0); behenic acid (22:0); erucic acid (22:1n-9); docosahexaenoic acid (22:6n-3); lignoceric acid (24:0); nervonic acid (24:1n-9); omega-3 (n-3); omega-6 (n-6); omega-6/omega-3 ratios (n-6)/(n-3); saturated fatty acids (SFA); monounsaturated fatty acids (MUFA); polyunsaturated fatty acids (PUFA).

Table S6. TAG ions and relative intensity determined by ESI(+)-MS of the colostrum human milk before lyophilization (C0), and of the lyophilized colostrum samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (CL0 to CL180)

m/z	Ionization	Possible lipids[b]	Relative intensity / %							
			C0	CL0	CL30	CL60	CL90	CL120	CL150	CL180
822	NH_4+	LaOO, MPoO, MPL, LaSL, PdPMa, PPPo, MPO, LaSO	39.23	37.76	40.69	40.45	42.33	38.70	43.99	43.56
846	NH_4+	OML, PPoL, MrSL, MrPoEi, MSL, PoPoL, PoPoO, PdMaLn, PPLn, MSLn	33.17	32.87	33.47	35.28	34.79	35.38	35.65	33.54
848	NH_4+	SPoPo, PLP, SLM, MOO, PPoO, PMaMa, LaLA	55.53	53.93	56.41	56.53	57.88	59.90	57.46	54.90
850	NH_4+	OPP, PPoS, LaLEi, PdMaO, PMaMa, PoMaMa, MPEi	45.57	43.69	43.44	44.84	44.19	44.62	45.38	49.46
872	NH_4+	MDPo, PLL, MEpO, OLPo, SLnPo, PEpPo, PLnO, PPAa, PpoEt	43.53	44.60	44.12	43.87	45.55	42.71	41.81	41.43
874	NH_4+	PLO, PDM, SLnP, OPoO, PEpP, SEpM, SLPo, MaMaLn, PoPoEi, PdLnHe	99.52	99.44	100.00	100.00	100.00	100.00	99.17	93.65
876	NH_4+	POO, ALM, SOPo, SLP, APoPo, PPoEi, LaOEr	100.00	100.00	93.33	96.67	99.29	95.52	94.80	98.49
878	NH_4+	SPoS, AOM, APoP, SOP, MSEi, MrSEi, MrSA, PPEi	58.10	58.64	51.06	52.37	55.98	54.35	60.34	56.53
900	NH_4+	SLL, SEpPo, PDPo, ALnPo, PEpO, SLnO, MDO, MrLnBh, OOL	42.24	41.98	39.31	38.21	39.66	34.68	36.18	38.88
902	NH_4+	SLnS, SLO, AEpM, ALPo, ALnP, SDM, SEpP, PDP, OOO, PoOEi	35.91	34.89	32.51	34.34	34.79	32.25	33.17	32.42

[a]Vacuum packed, at –18 °C; [b]fatty acid abbreviations: A: arachidic acid (20:0); Aa: arachidonic acid (20:4n-6); Bh: docosanoic acid (22:0); C: capric acid (10:0); D: docosahexaenoic acid (22:6n-3); Ei: eicosenoic acid (20:1n-9); Ep: eicosapentaenoic acid (20:5n-3); Et: eicosatrienoic acid (20:3n-3); Er: erucic acid (22:1n-9); He: heneicosanoic acid (21:0); L: linoleic acid (18:2n-6); La: lauric acid (12:0); Ln: linolenic acid (18:3n-6); M: myristic acid (14:0); Ma: margaric acid (17:0); Mr: myristoleic acid (14:1); O: oleic acid (18:1n-9); P: palmitic acid (16:0); Pd: pentadecanoic acid (15:0); Po: palmitoleic acid (16:1); S: stearic acid (18:0).

Table S7. TAG ions and relative intensity determined by ESI(+)-MS of the transitional human milk before lyophilization (T0), and of the lyophilized transitional samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (TL0 to TL180)

m/z	Ionization	Possible lipids[b]	Relative intensity / %							
			T0	TL0	TL30	TL60	TL90	TL120	TL150	TL180
766	NH_4+	CPO, LaMO, MrPdPd, MMPo	55.31	58.68	58.26	59.54	58.51	56.19	58.53	52.65
794	NH_4+	COS, LaPO, MrPP, MPoP, MMO, MMrS, PdPsPo, SlaPo	66.38	63.11	65.75	65.50	65.94	66.76	60.01	62.25
820	NH_4+	LaOO, MPoO, MPL, LaSL, PdPMa, LaSO, MPoO, LaPoEi, MMrEi, PdPdL, PpoPo	50.43	47.62	49.08	49.64	52.00	49.20	46.29	46.80
822	NH_4+	LaOO, MPoO, MPL, LaSL, PdPMa, PPPo, MPO, LaSO	45.32	40.73	43.41	42.30	43.38	41.14	39.93	39.99
848	NH_4+	SPoPo, PLP, SLM, MOO, PPoO, PMaMa, LaLA	54.37	53.43	53.27	55.44	52.58	51.81	53.28	50.89
850	NH_4+	OPP, PPoS, LaLEi, PdMaO, PMaMa, PoMaMa, MPEi	42.58	41.59	39.24	39.47	45.80	37.73	40.39	41.32
872	NH_4+	MDPo, PLL, MEpO, OLPo, SLnPo, PEpPo, PLnO, PPAa, PpoEt	39.63	42.07	41.41	40.34	40.90	38.70	39.22	41.01
874	NH_4+	PLO, PDM, SLnP, OPoO, PEpP, SEpM, SLPo, MaMaLn, PoPoEi, PdLnHe	100.00	94.98	91.62	94.04	92.94	85.59	87.11	86.79
876	NH_4+	POO, ALM, SOPo, SLP, APoPo, PPoEi, LaOEr	98.65	95.06	90.00	100.00	98.53	99.10	88.84	89.47
878	NH_4+	SPoS, AOM, APoP, SOP, MSEi, MrSEi, MrSA, PPEi	55.35	52.34	52.05	52.90	55.59	55.59	54.60	53.51
900	NH_4+	SLL, SEpPo, PDPo, ALnPo, PEpO, SLnO, MDO, MrLnBh, OOL	37.69	37.32	37.55	36.96	34.76	29.44	32.85	35.78

[a]Vacuum packed, at –18 °C; [b]fatty acid abbreviations: A: arachidic acid (20:0); Aa: arachidonic acid (20:4n-6); Bh: docosanoic acid (22:0); C: capric acid (10:0); D: docosahexaenoic acid (22:6n-3); Ei: eicosenoic acid (20:1n-9); Ep: eicosapentaenoic acid (20:5n-3); Et: eicosatrienoic acid (20:3n-3); Er: erucic acid (22:1n-9); He: heneicosanoic acid (21:0); L: linoleic acid (18:2n-6); La: lauric acid (12:0); Ln: linolenic acid (18:3n-6); M: myristic acid (14:0); Ma: margaric acid (17:0); Mr: myristoleic acid (14:1); O: oleic acid (18:1n-9); P: palmitic acid (16:0); Pd: pentadecanoic acid (15:0); Po: palmitoleic acid (16:1); S: stearic acid (18:0).

Table S8. TAG ions and relative intensity determined by ESI(+)-MS of the mature human milk before lyophilization (M0), and of the lyophilized mature human milk pool samples stored[a] for 1, 30, 60, 90, 120, 150 and 180 days (ML0 to ML180)

m/z	Ionization	Possible lipids[b]	Relative intensity / %							
			M0	ML0	ML30	ML60	ML90	ML120	ML150	ML180
766	NH_4+	CPO, LaMO, MrPdPd, MMPo	47.15	46.86	45.38	43.57	48.31	45.09	46.69	45.61
792	NH_4+	OCO, LPLa, LaPoO	40.68	44.91	40.60	40.83	40.75	42.25	42.79	39.46
794	NH_4+	COS, LaPO, MrPP, MPoP, MMO, MMrS, PdPsPo, SlaPo	60.90	61.41	61.30	58.83	64.29	61.42	63.54	57.00
820	NH_4+	LaOO, MPoO, MPL, LaSL, PdPMa, LaSO, MPoO, LaPoEi, MMrEi, PdPdL, PpoPo	43.58	47.93	42.29	42.64	42.81	40.25	43.40	41.18
822	NH_4+	LaOO, MPoO, MPL, LaSL, PdPMa, PPPo, MPO, LaSO	43.46	41.45	42.74	40.40	42.40	46.04	46.14	45.67
846	NH_4+	OML, PPoL, MrSL, MrPoEi, MSL, PoPoL, PoPoO, PdMaLn, PPLn, MSLn	31.14	32.70	31.65	31.41	29.74	27.01	28.16	29.22
848	NH_4+	SPoPo, PLP, SLM, MOO, PPoO, PMaMa, LaLA	57.26	54.49	51.33	57.30	51.32	52.95	54.53	53.43
850	NH_4+	OPP, PPoS, LaLEi, PdMaO, PMaMa, PoMaMa, MPEi	48.42	41.61	44.62	44.51	48.52	48.88	48.49	44.99
874	NH_4+	PLO, PDM, SLnP, OPoO, PEpP,SEpM, SLPo, MaMaLn, PoPoEi, PdLnHe	96.36	98.63	93.79	93.03	87.21	87.66	80.88	85.49
876	NH_4+	POO, ALM, SOPo, SLP, APoPo, PPoEi, LaOEr	100.00	94.37	97.94	100.00	90.89	93.86	98.37	98.84
878	NH_4+	SPoS, AOM, APoP, SOP, MSEi, MrSEi, MrSA, PPEi	58.15	56.70	55.18	52.46	58.58	58.55	59.62	59.65

[a]Vacuum packed, at –18 °C; [b]fatty acid abbreviations: A: arachidic acid (20:0); Aa: arachidonic acid (20:4n-6); Bh: docosanoic acid (22:0); C: capric acid (10:0); D: docosahexaenoic acid (22:6n-3); Ei: eicosenoic acid (20:1n-9); Ep: eicosapentaenoic acid (20:5n-3); Et: eicosatrienoic acid (20:3n-3); Er: erucic acid (22:1n-9); He: heneicosanoic acid (21:0); L: linoleic acid (18:2n-6); La: lauric acid (12:0); Ln: linolenic acid (18:3n-6); M: myristic acid (14:0); Ma: margaric acid (17:0); Mr: myristoleic acid (14:1); O: oleic acid (18:1n-9); P: palmitic acid (16:0); Pd: pentadecanoic acid (15:0); Po: palmitoleic acid (16:1); S: stearic acid (18:0).

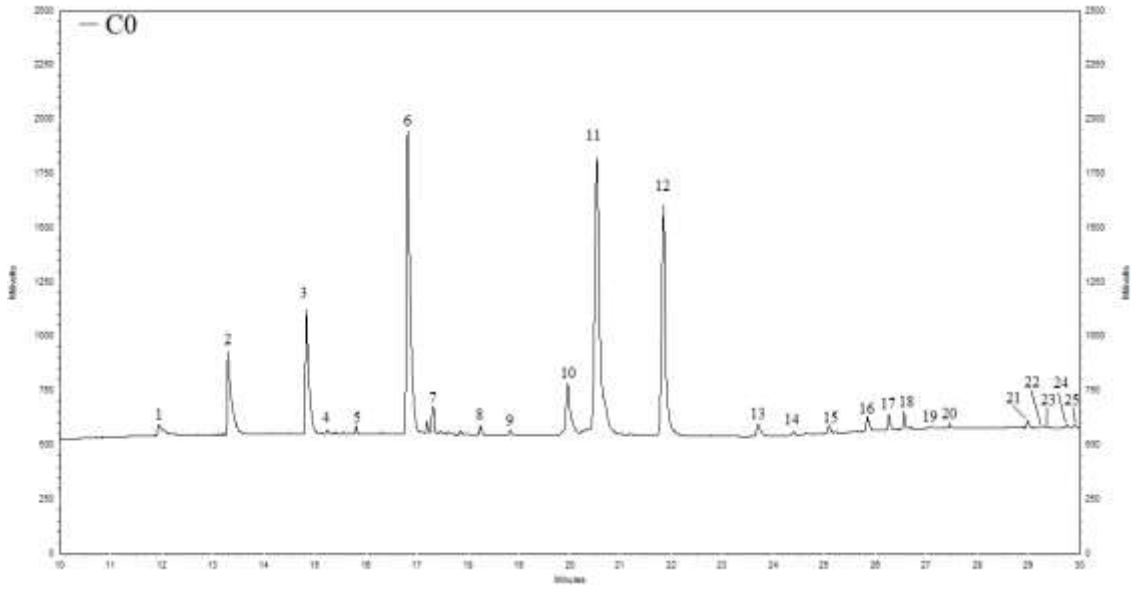

Figure S1. Chromatogram of the colostrum human milk before lyophilization (C0). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

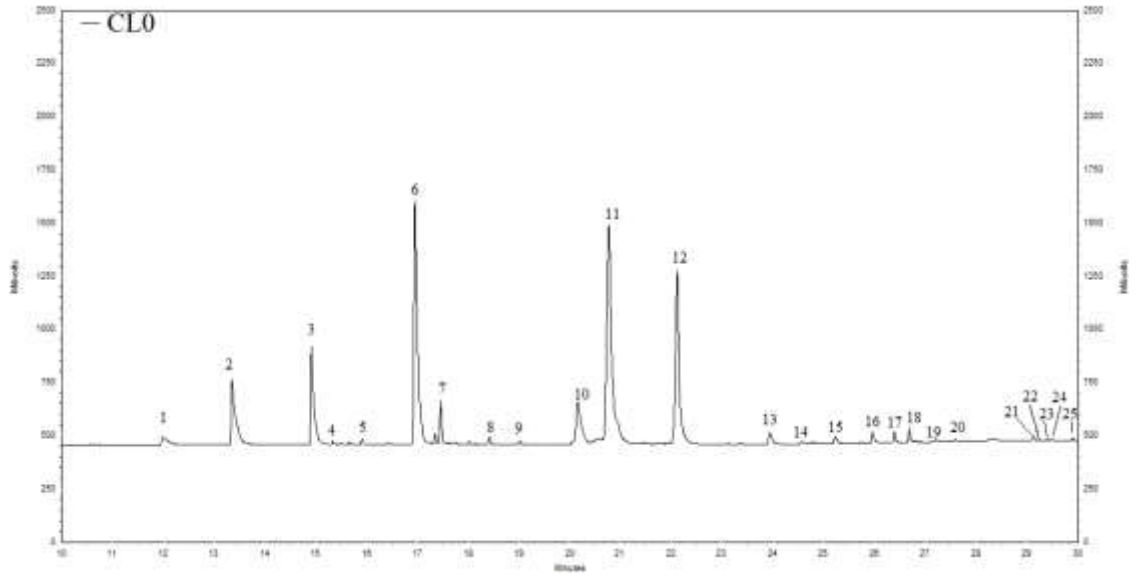

Figure S2. Chromatogram of the lyophilized colostrum human milk sample stored for 1 day (CL0). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

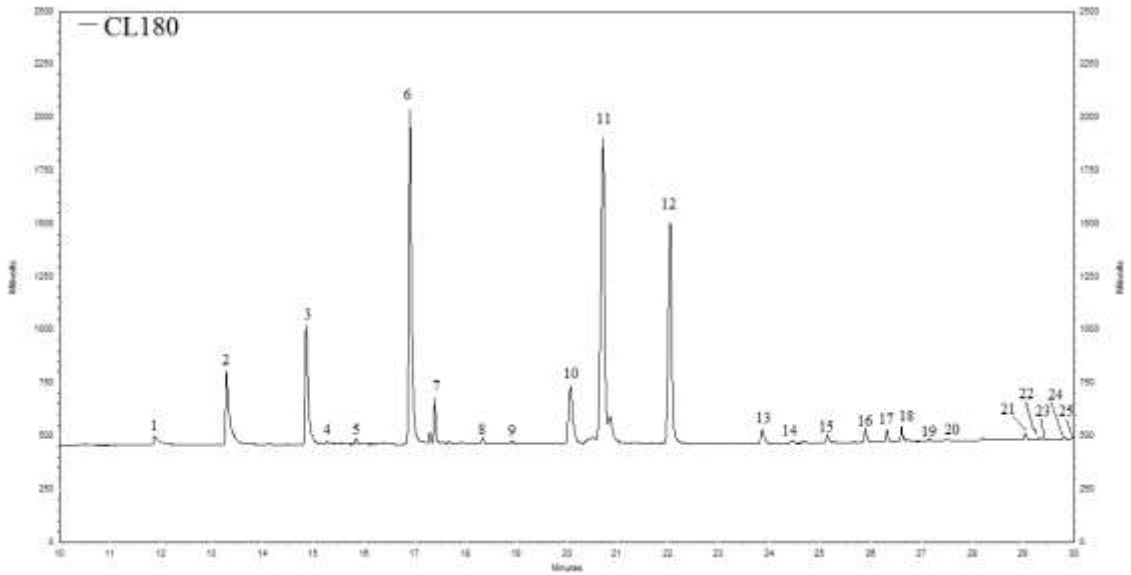

Figure S3. Chromatogram of the lyophilized colostrum human milk sample stored for 180 day (CL180). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

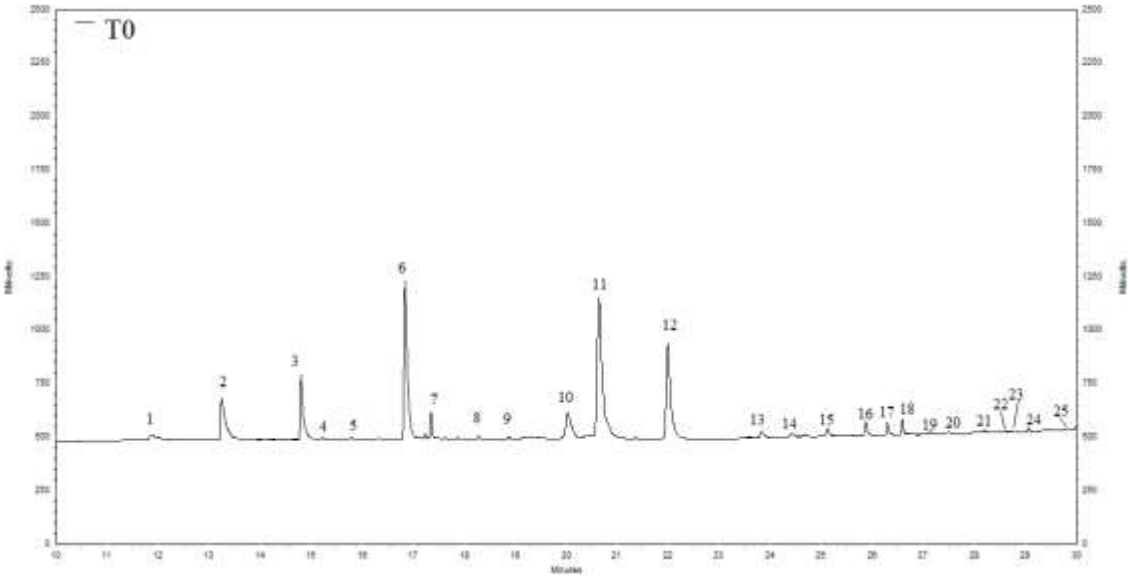

Figure S4. Chromatogram of the transitional human milk before lyophilization (T0). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

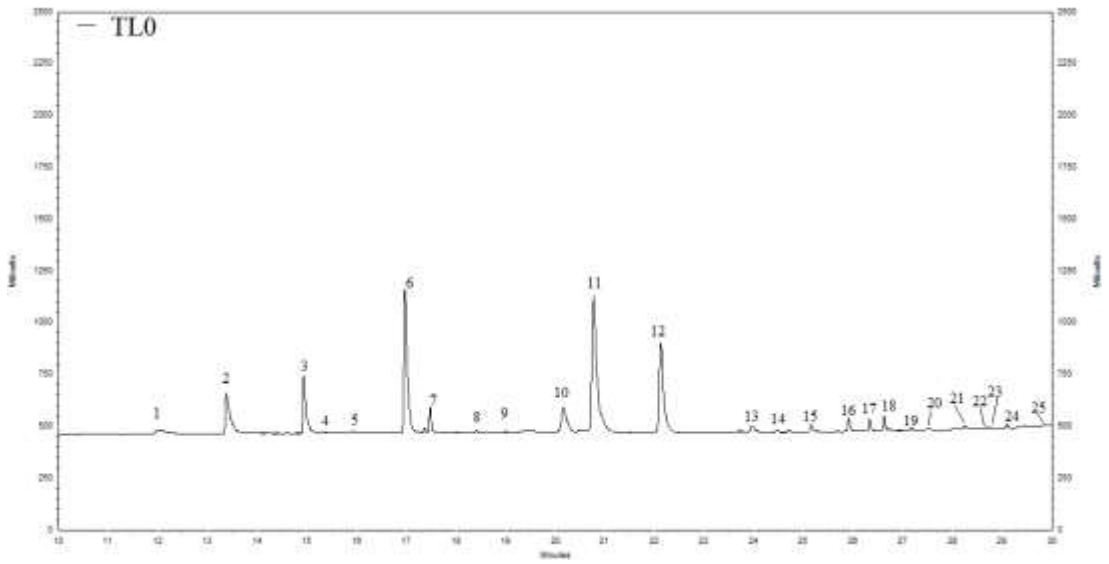

Figure S5. Chromatogram of the lyophilized transitional human milk sample stored for 1 day (TL0). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

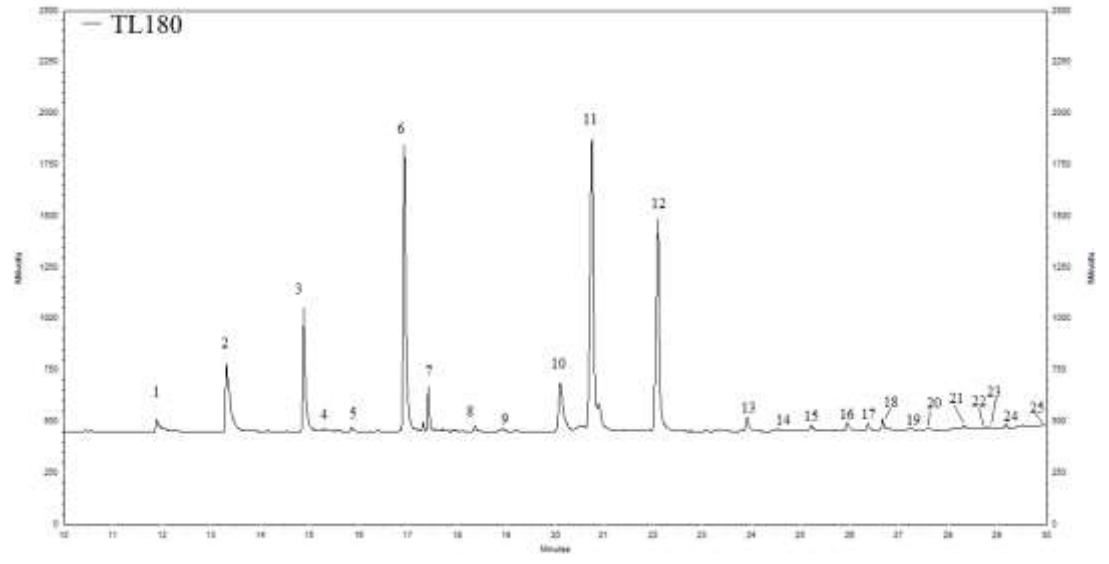

Figure S6. Chromatogram of the lyophilized transitional human milk sample stored for 180 day (TL180). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

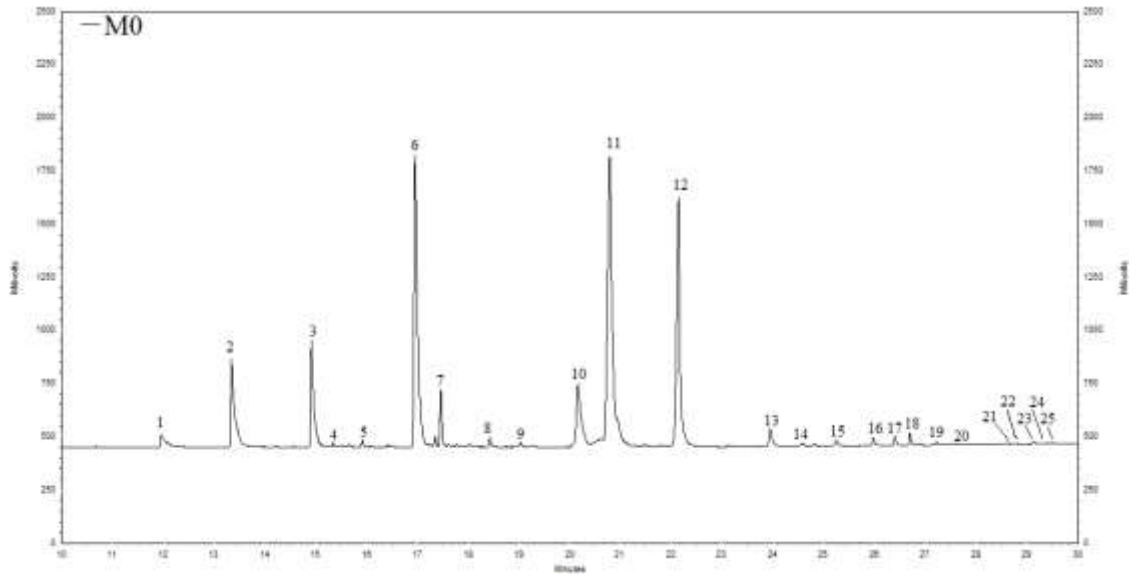

Figure S7. Chromatogram of the mature human milk before lyophilization (M0). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

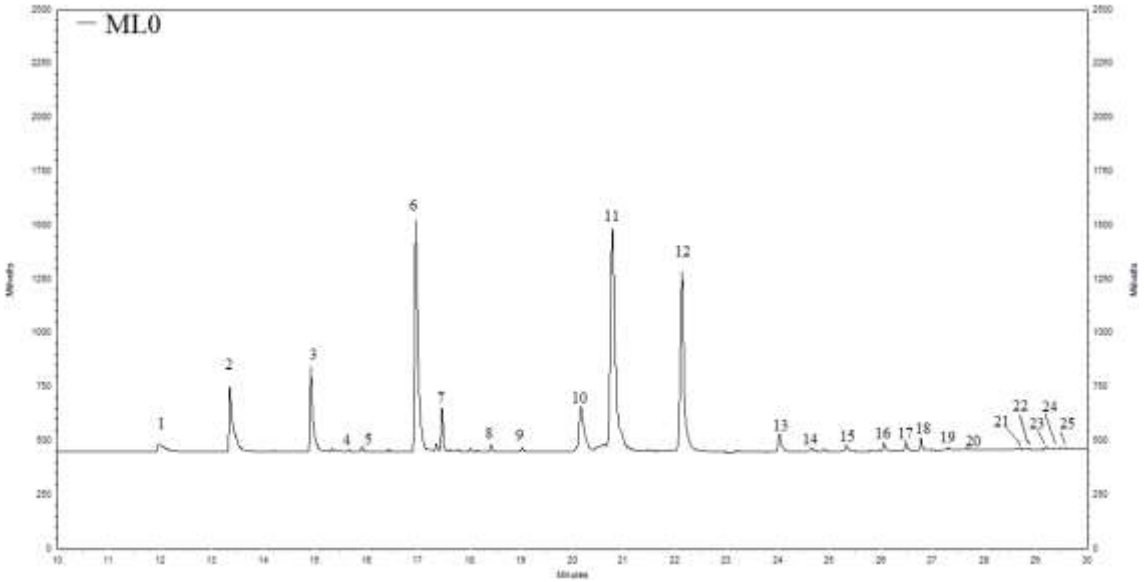

Figure S8. Chromatogram of the lyophilized mature human milk sample stored for 1 day (ML0). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

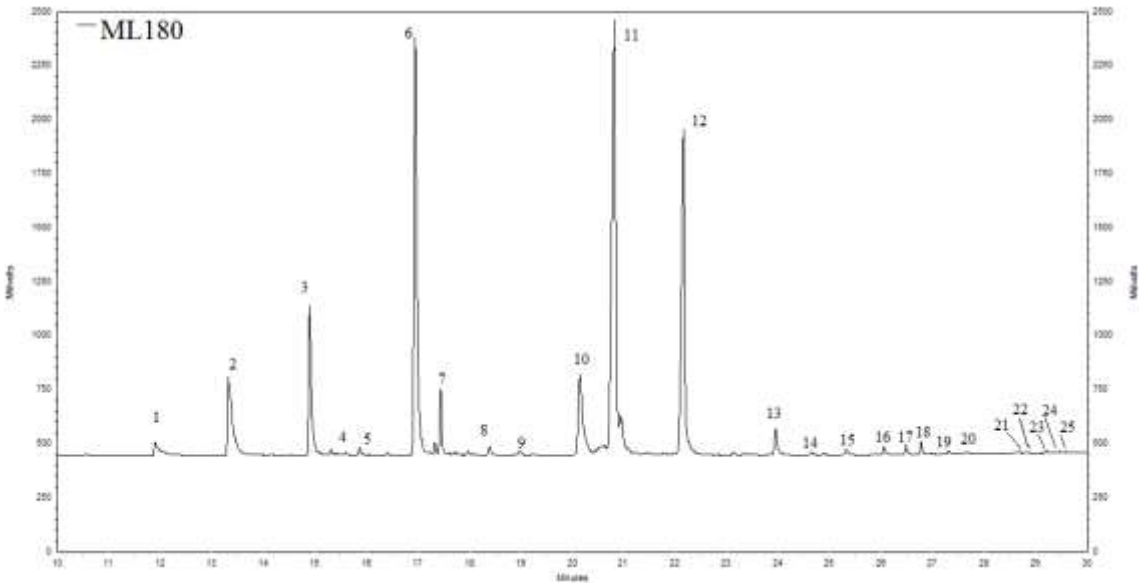

Figure S9. Chromatogram of the lyophilized mature human milk sample stored for 180 day (ML180). 1: capric acid (10:0); 2: lauric acid (12:0); 3: myristic acid (14:0); 4: myristoleic acid (14:1); 5: pentadecylic acid (15:0); 6: palmitic acid (16:0); 7: palmitoleic acid (16:1); 8: margaric acid (17:0); 9: heptadecenoic acid (17:1); 10: stearic acid (18:0); 11: oleic acid (18:1n-9); 12: linoleic acid (18:2n-6); 13: linolenic acid (18:3n-3); 14: arachidic acid (20:0); 15: eicosenoic acid (20:1n-9); 16: heneicosylic acid (21:0); 17: dihomo-gamma-linolenic acid (20:3n-6); 18: eicosatrienoic acid (20:3n-3); 19: arachidonic acid (20:4n-6); 20: behenic acid (22:0); 21: eicosapentaenoic acid (20:5n-3); 22: erucic acid (22:1n-9); 23: lignoceric acid (24:0); 24: nervonic acid (24:1n-9); 25: docosahexaenoic acid (22:6n-3).

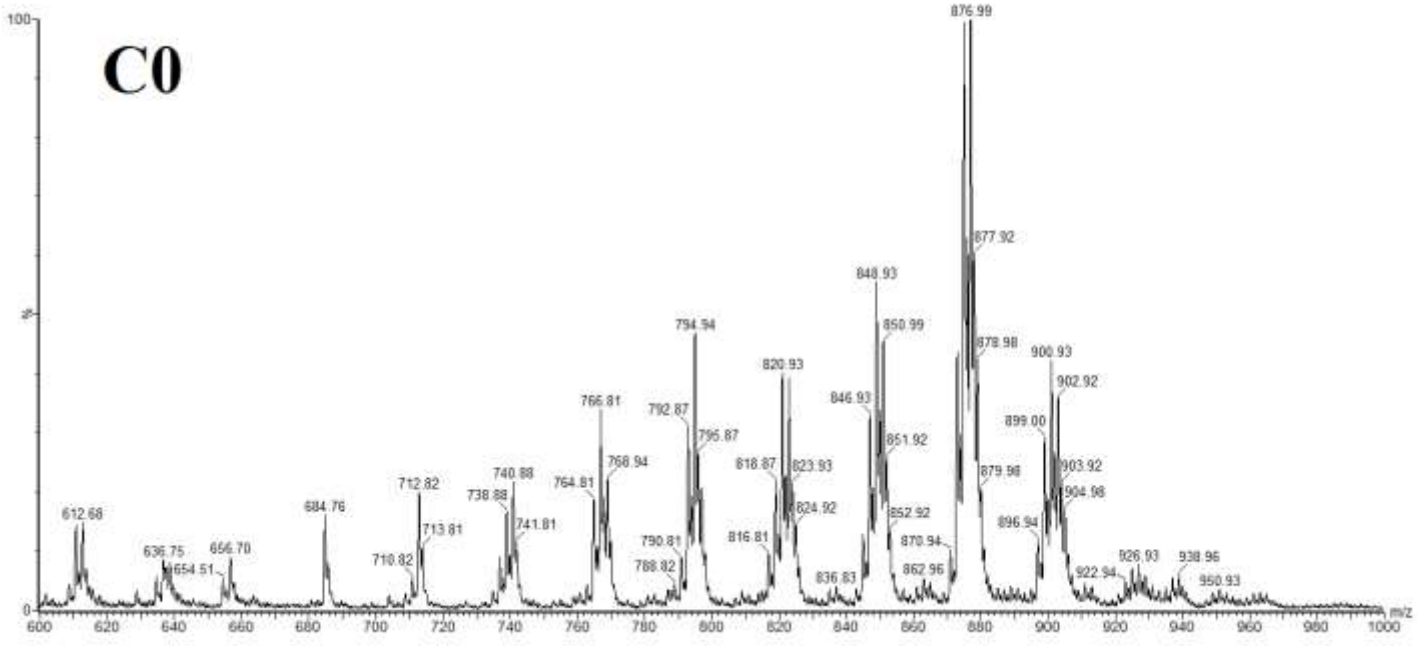

Figure S10. Lipid profile of the colostrum human milk before lyophilization (C0).

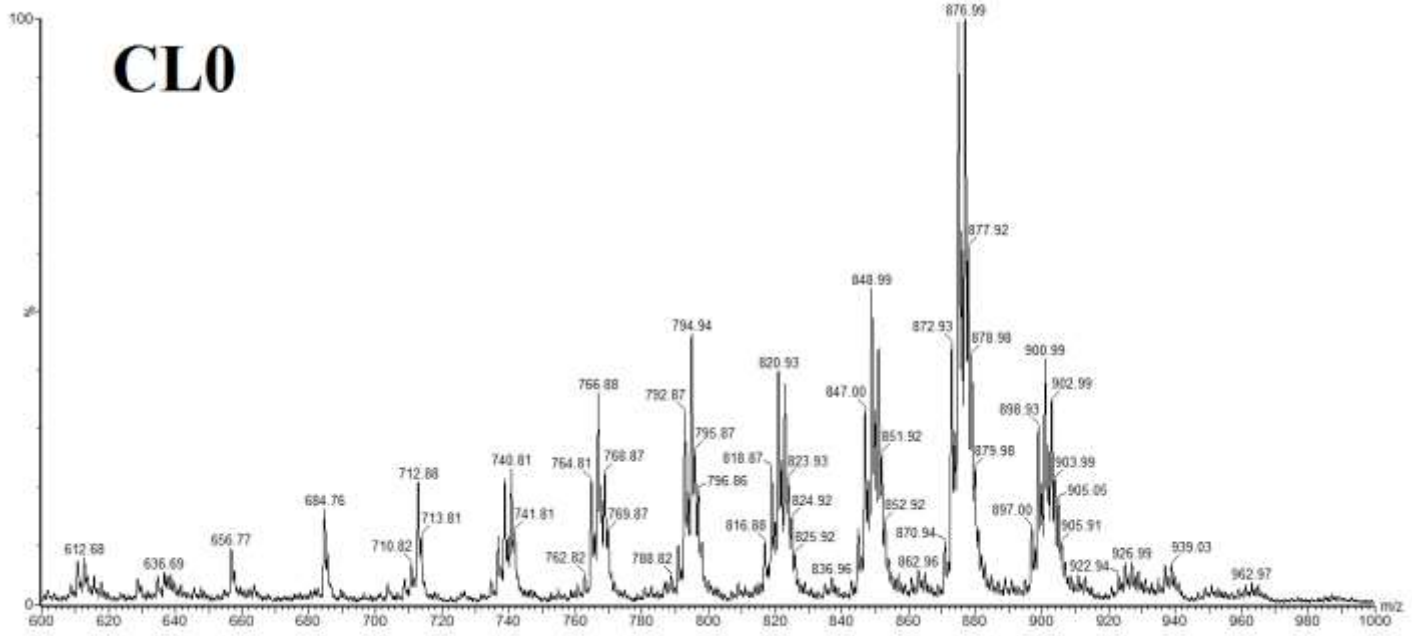

Figure S11. Lipid profile of the lyophilized colostrum human milk sample stored for 1 day (CL0).

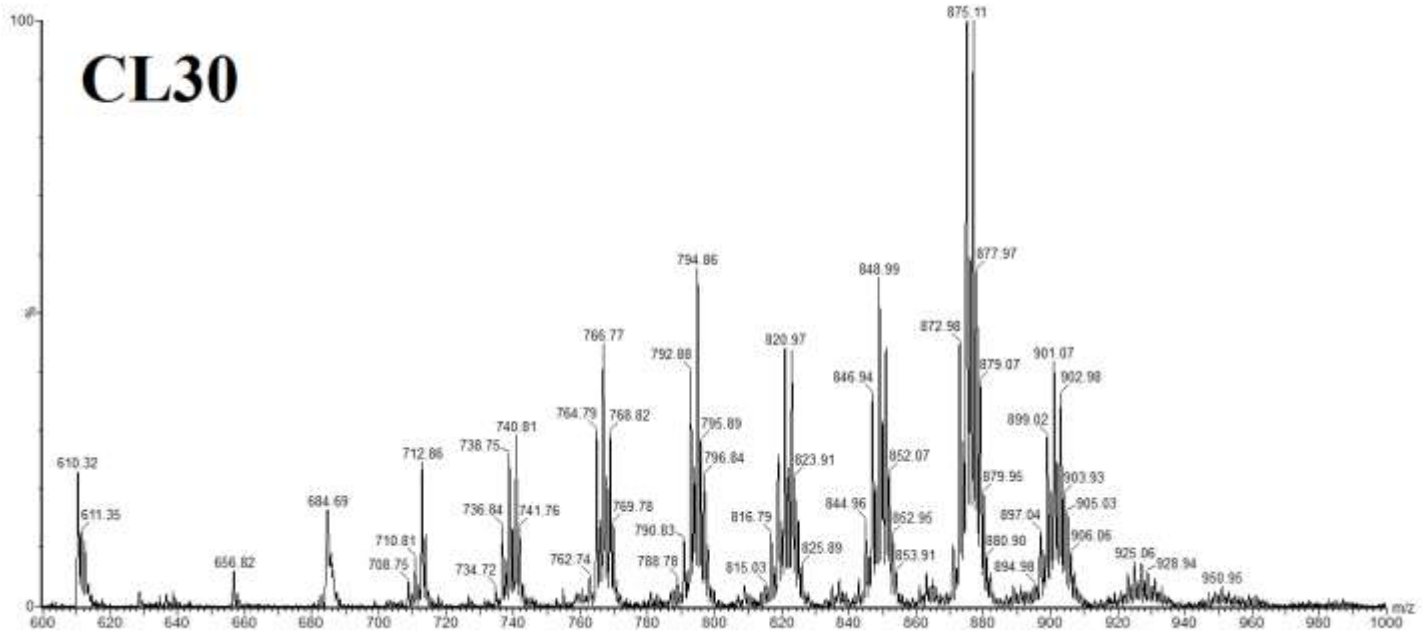

Figure S12. Lipid profile of the lyophilized colostrum human milk sample stored for 30 days (CL30).

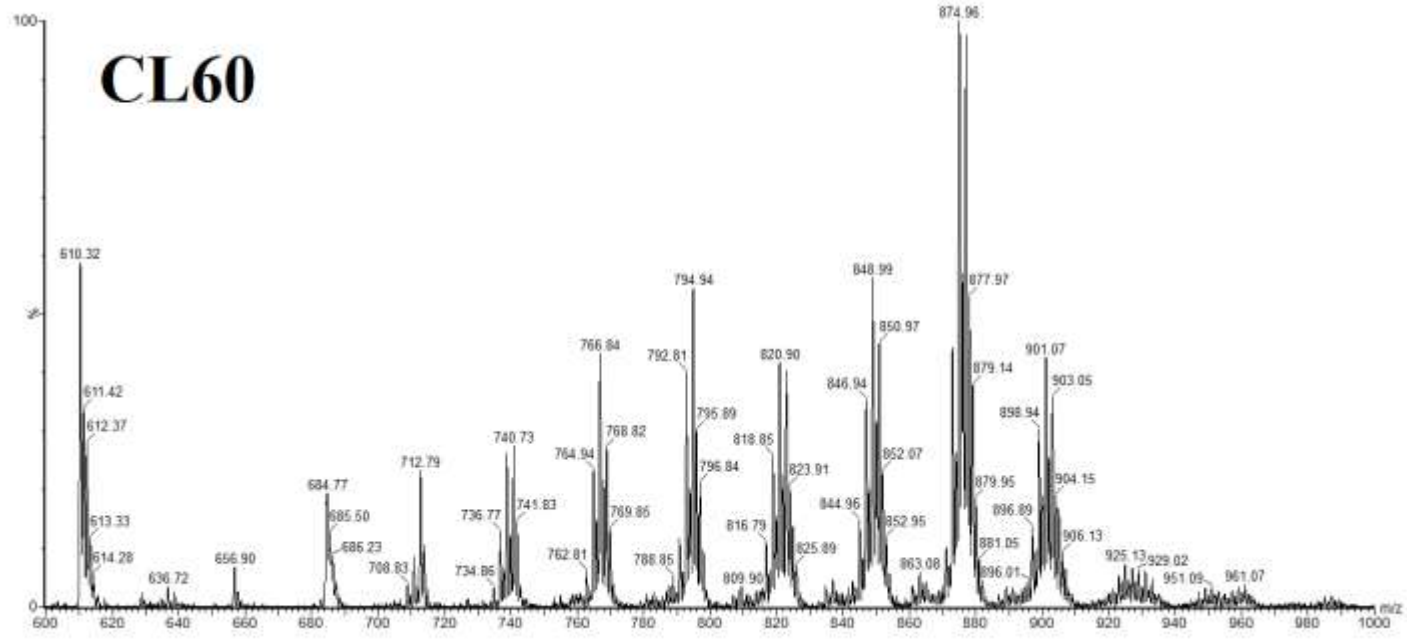

Figure S13. Lipid profile of the lyophilized colostrum human milk sample stored for 60 days (CL60).

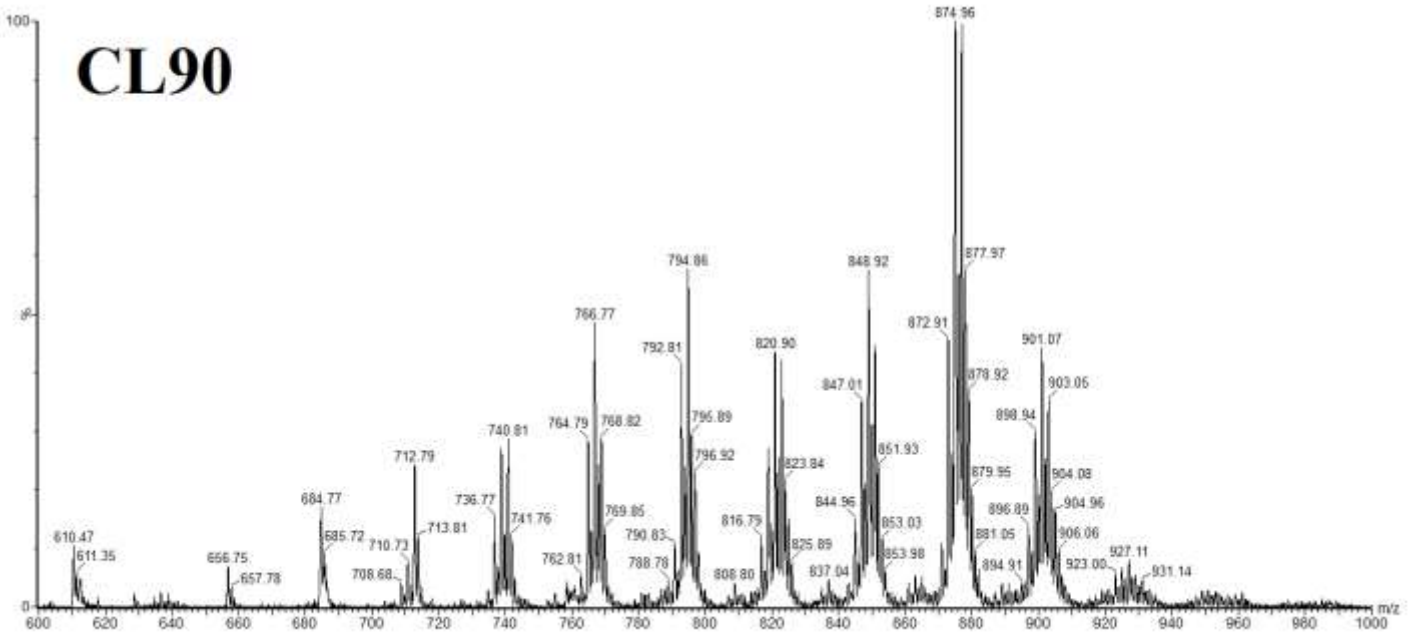

Figure S14. Lipid profile of the lyophilized colostrum human milk sample stored for 90 days (CL90).

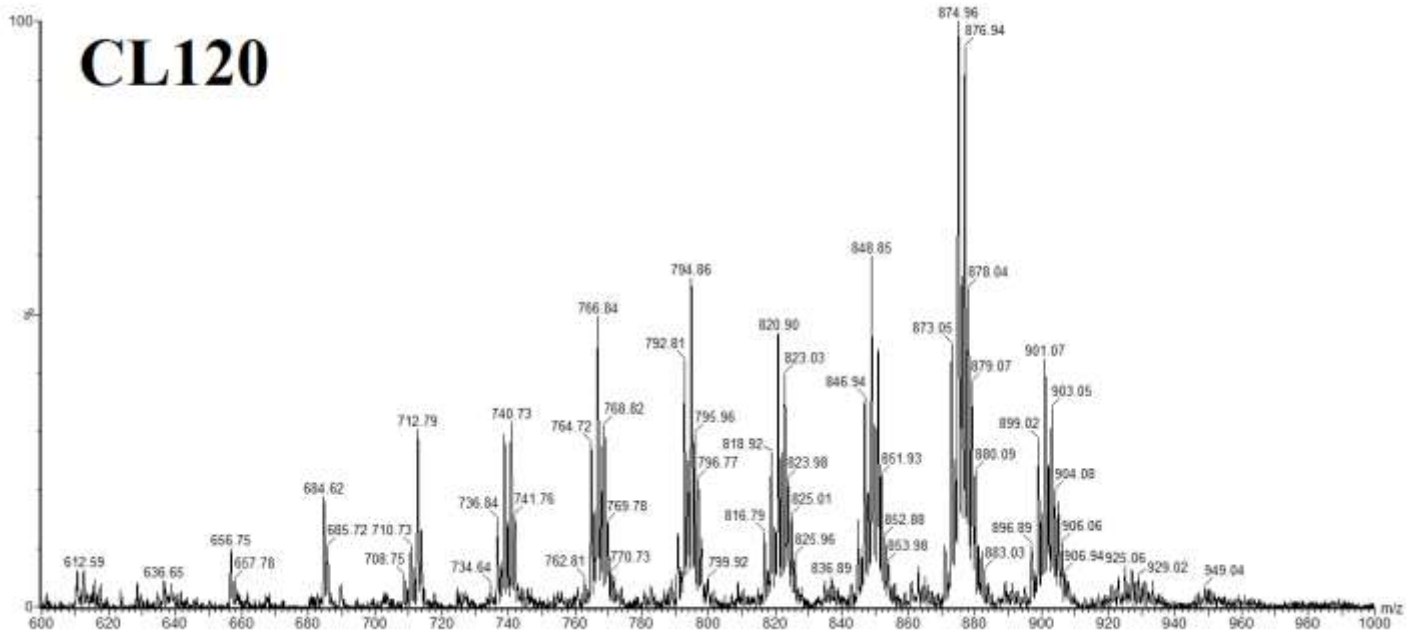

Figure S15. Lipid profile of the lyophilized colostrum human milk sample stored for 120 days (CL120).

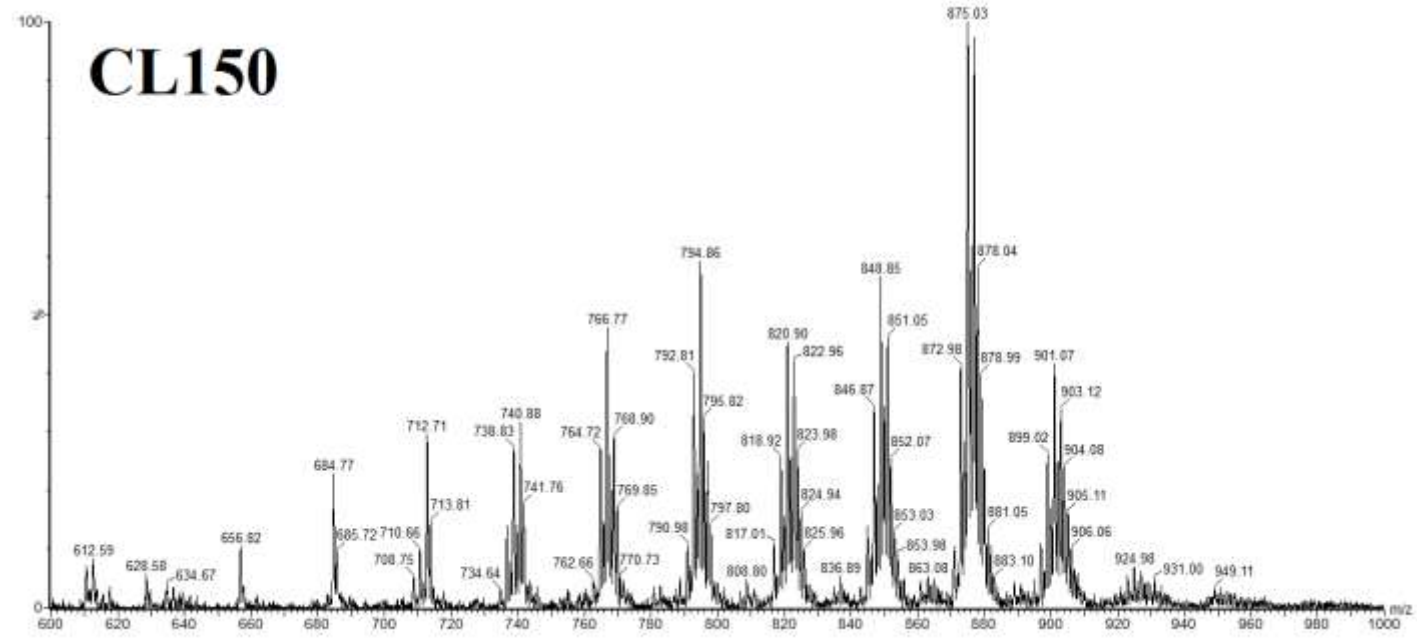

Figure S16. Lipid profile of the lyophilized colostrum human milk sample stored for 150 days (CL150).

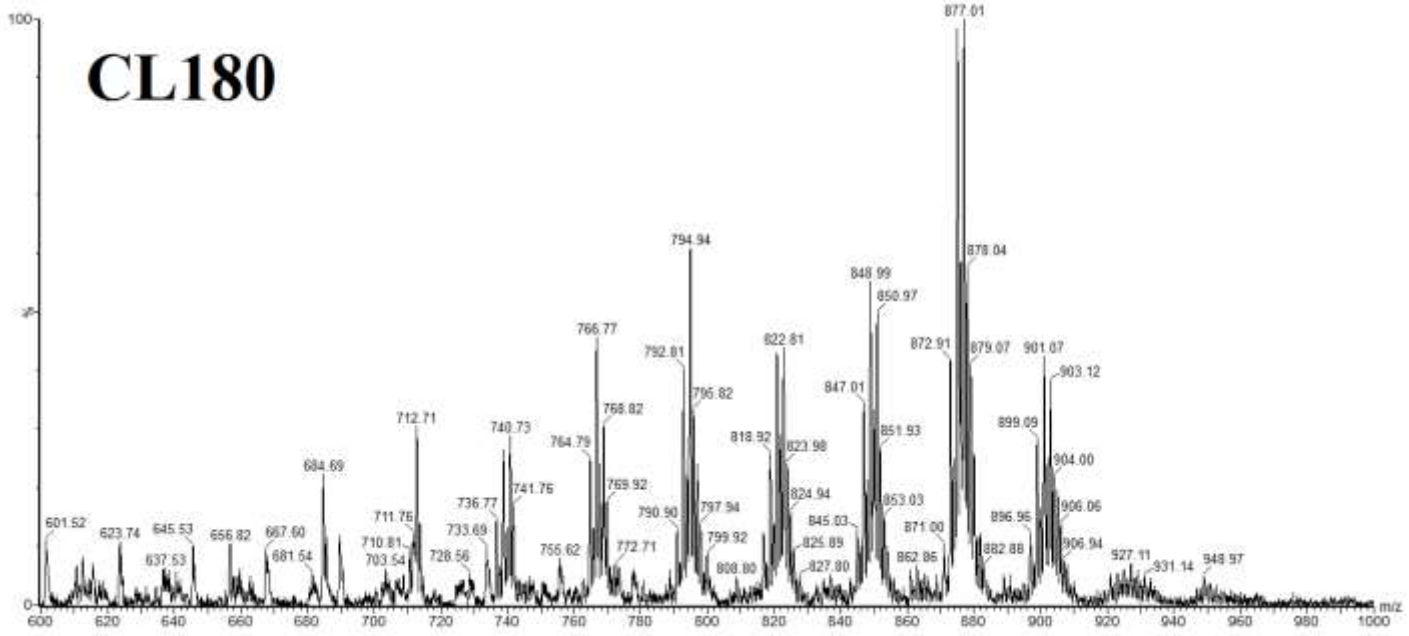

Figure S17. Lipid profile of the lyophilized colostrum human milk sample stored for 180 days (CL180).

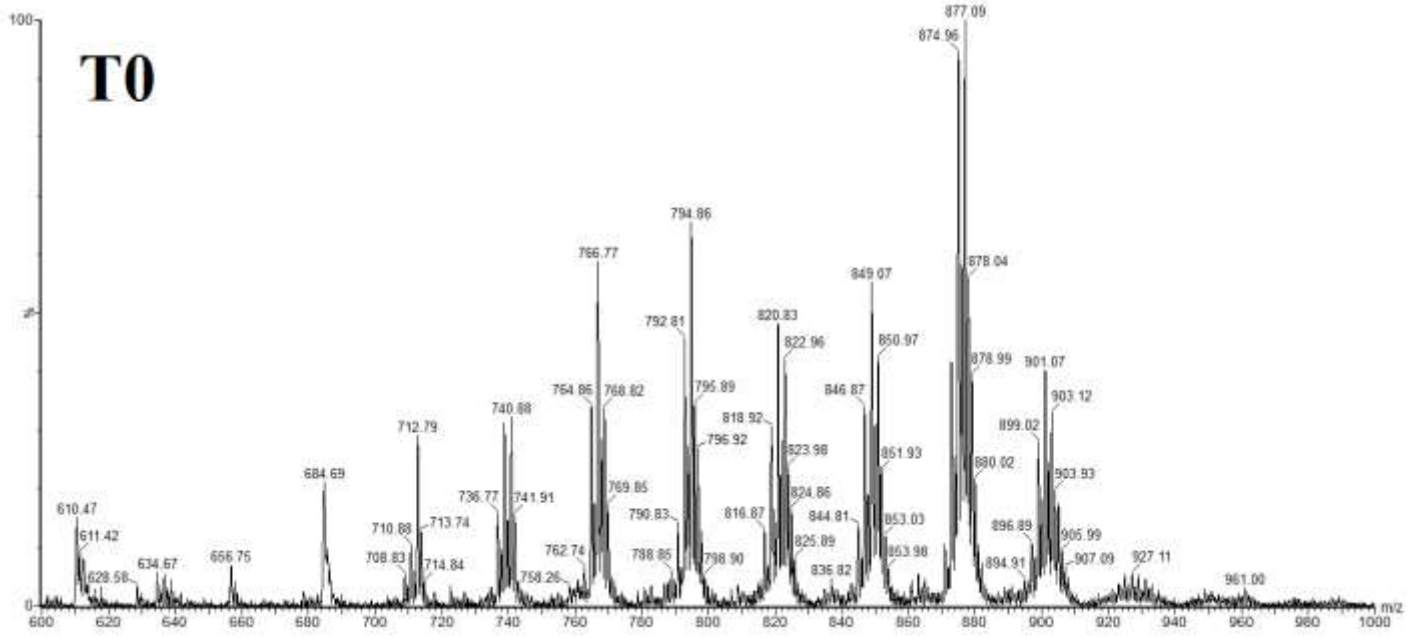

Figure S18. Lipid profile of the transitional human milk before lyophilization (T0).

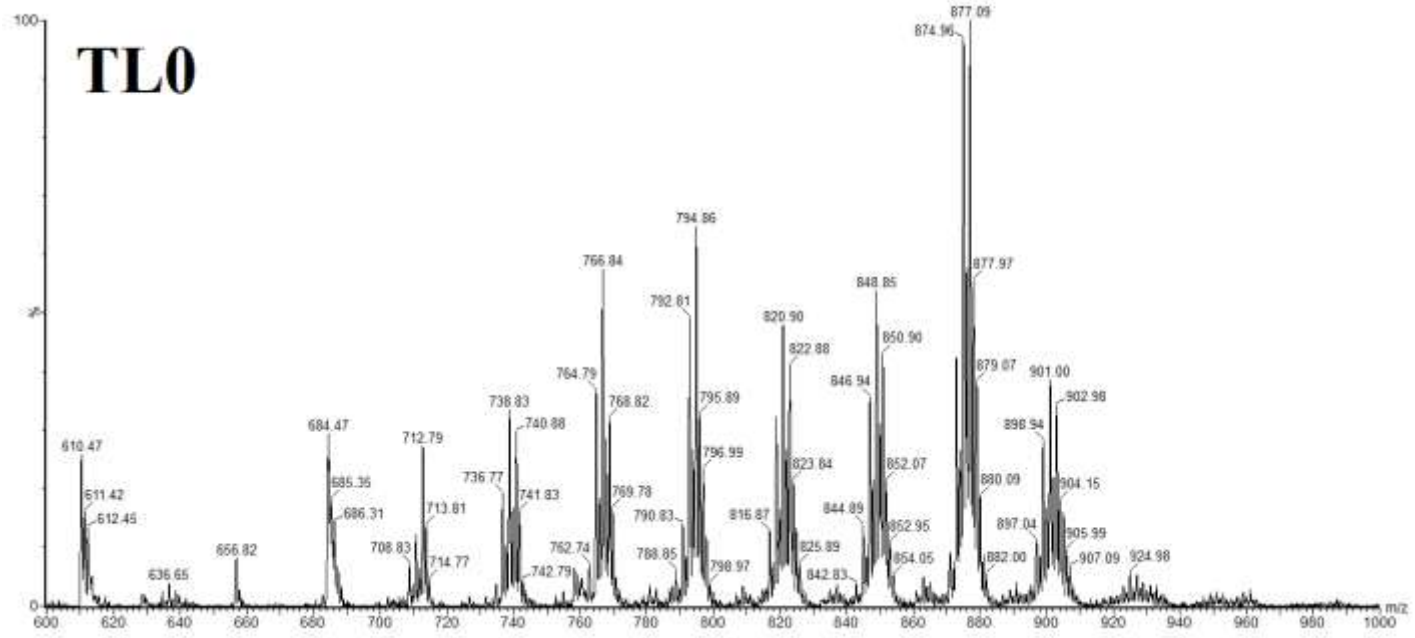

Figure S19. Lipid profile of the lyophilized transitional human milk sample stored for 1 day (TL0).

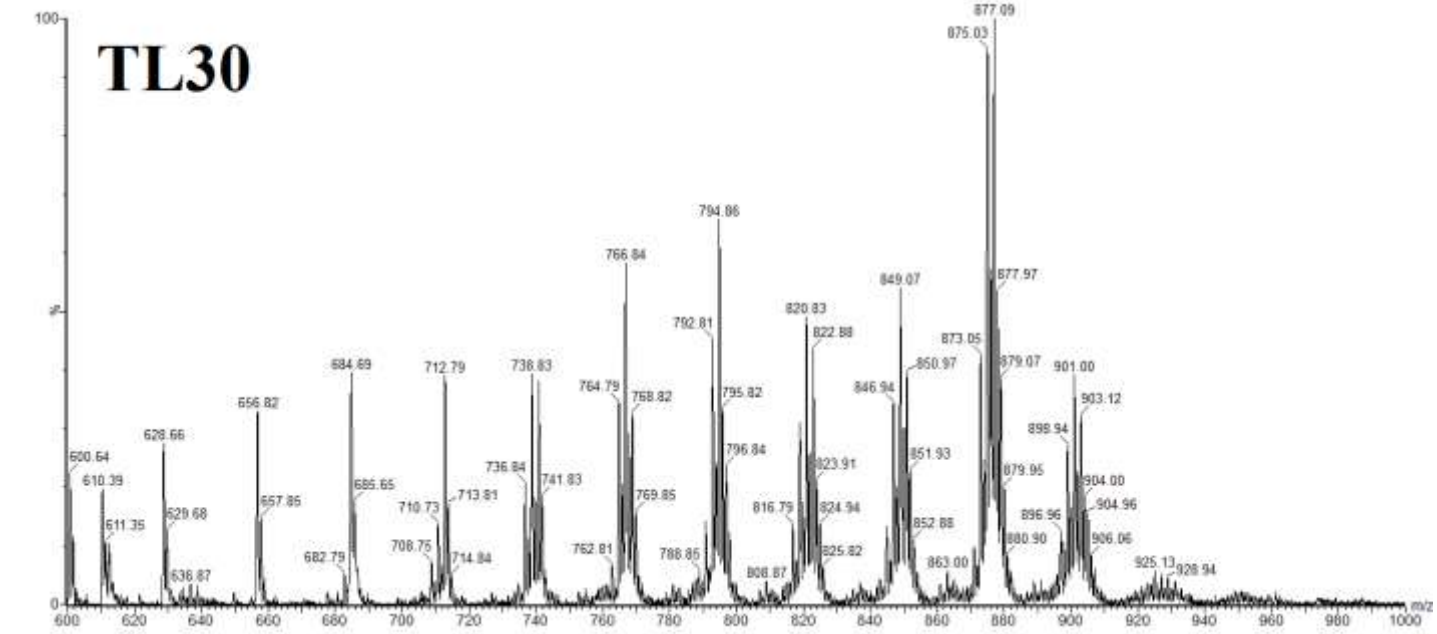

Figure S20. Lipid profile of the lyophilized transitional human milk sample stored for 30 days (TL30).

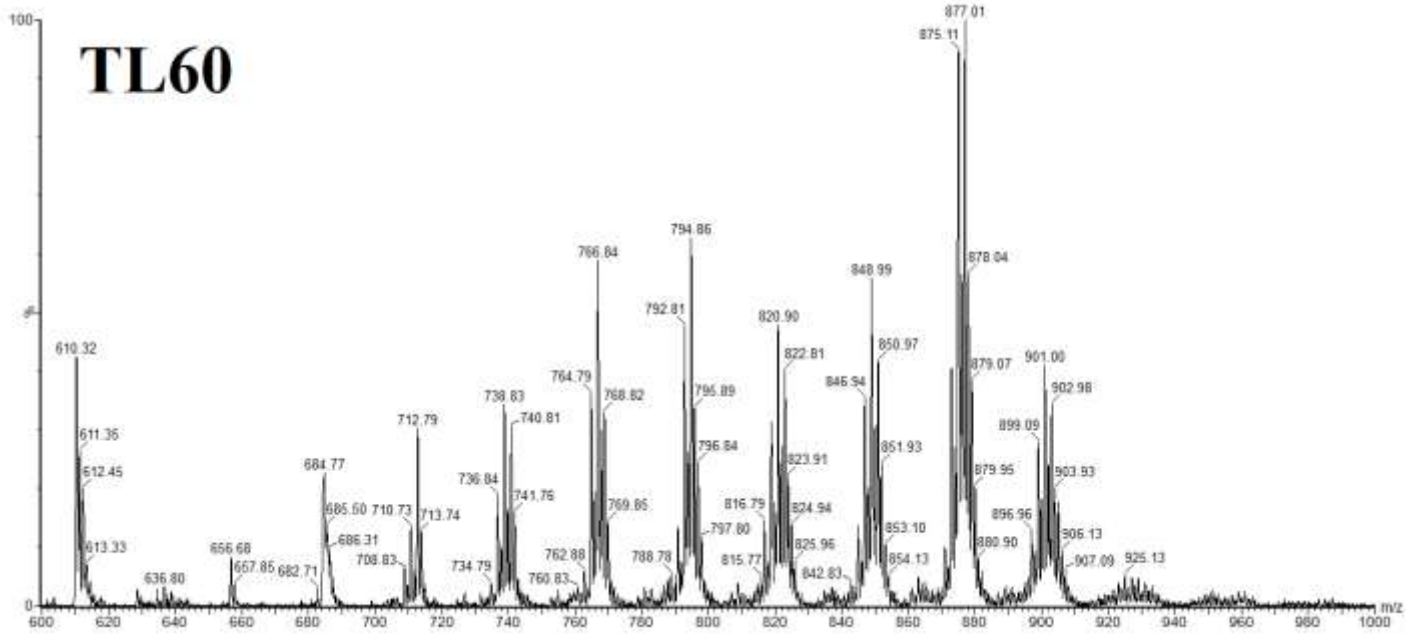

Figure S21. Lipid profile of the lyophilized transitional human milk sample stored for 60 days (TL60).

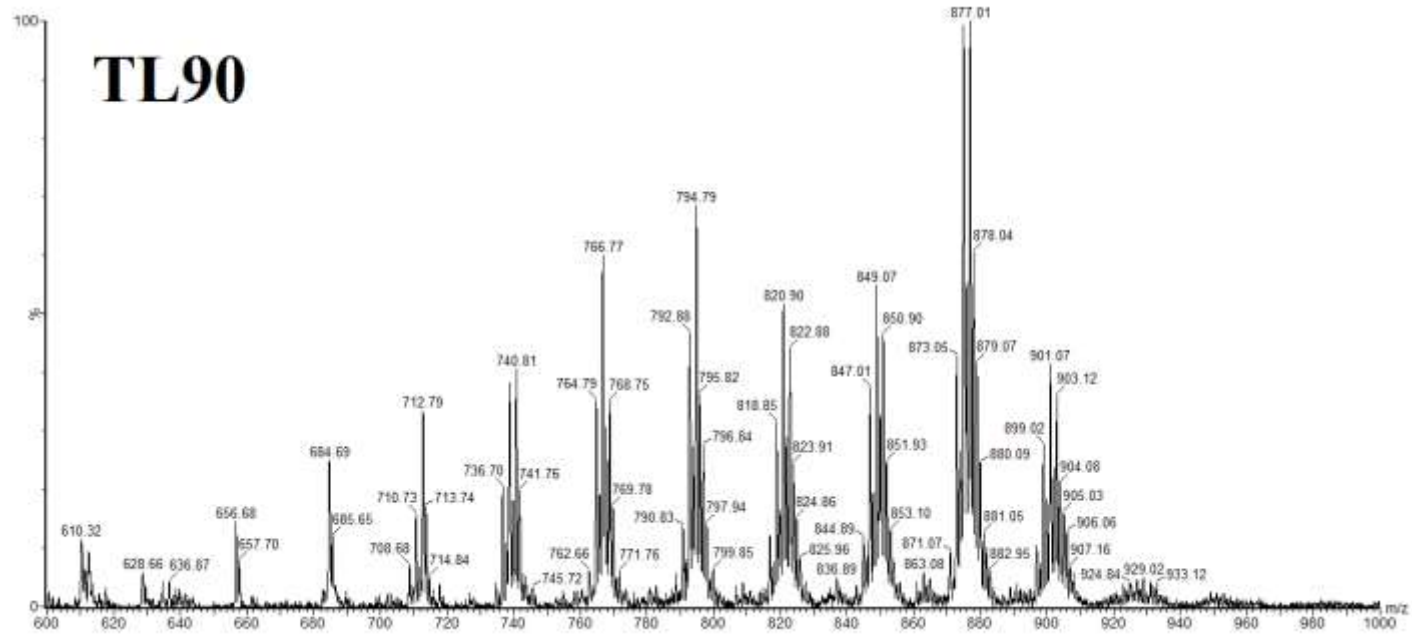

Figure S22. Lipid profile of the lyophilized transitional human milk sample stored for 90 days (TL90).

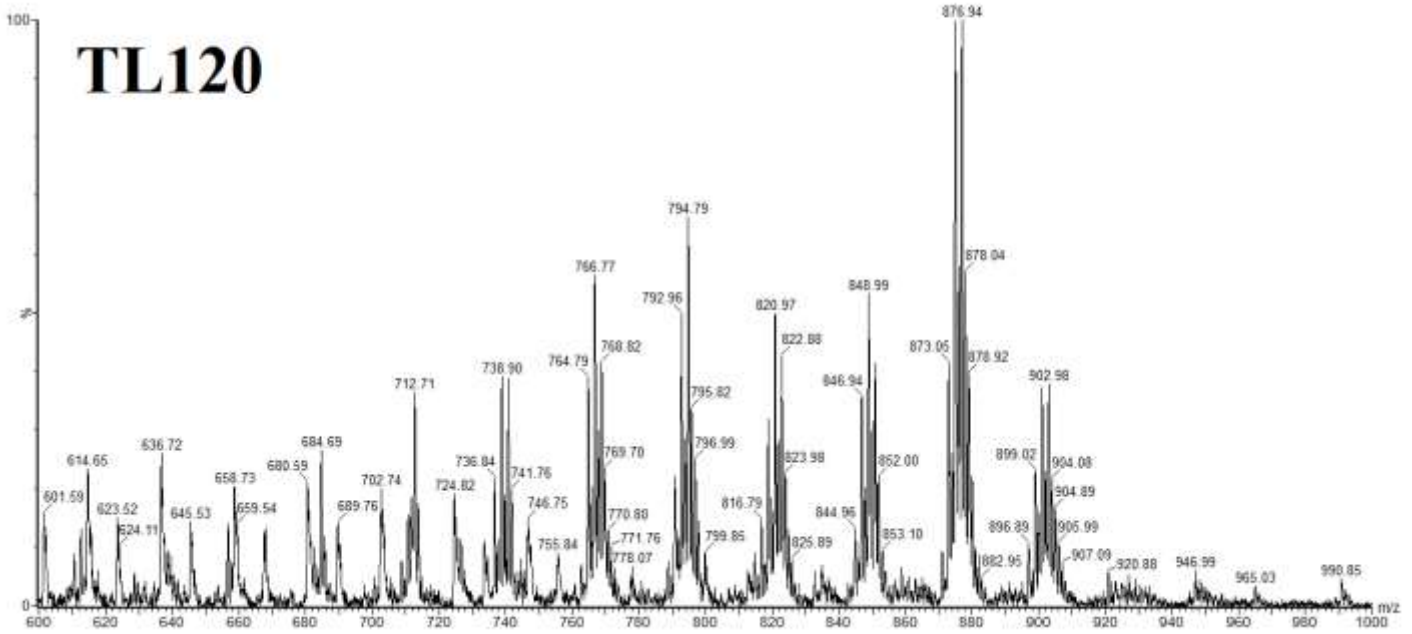

Figure S23. Lipid profile of the lyophilized transitional human milk sample stored for 120 days (TL120).

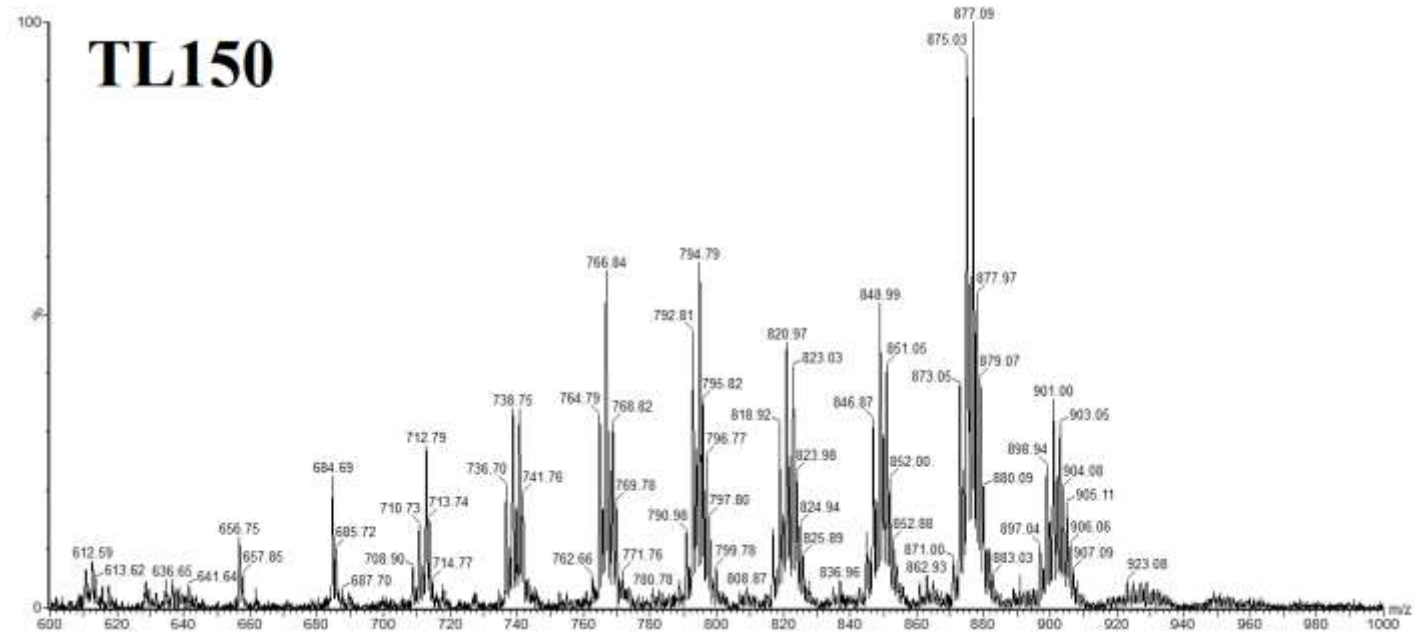

Figure S24. Lipid profile of the lyophilized transitional human milk sample stored for 150 days (TL150).

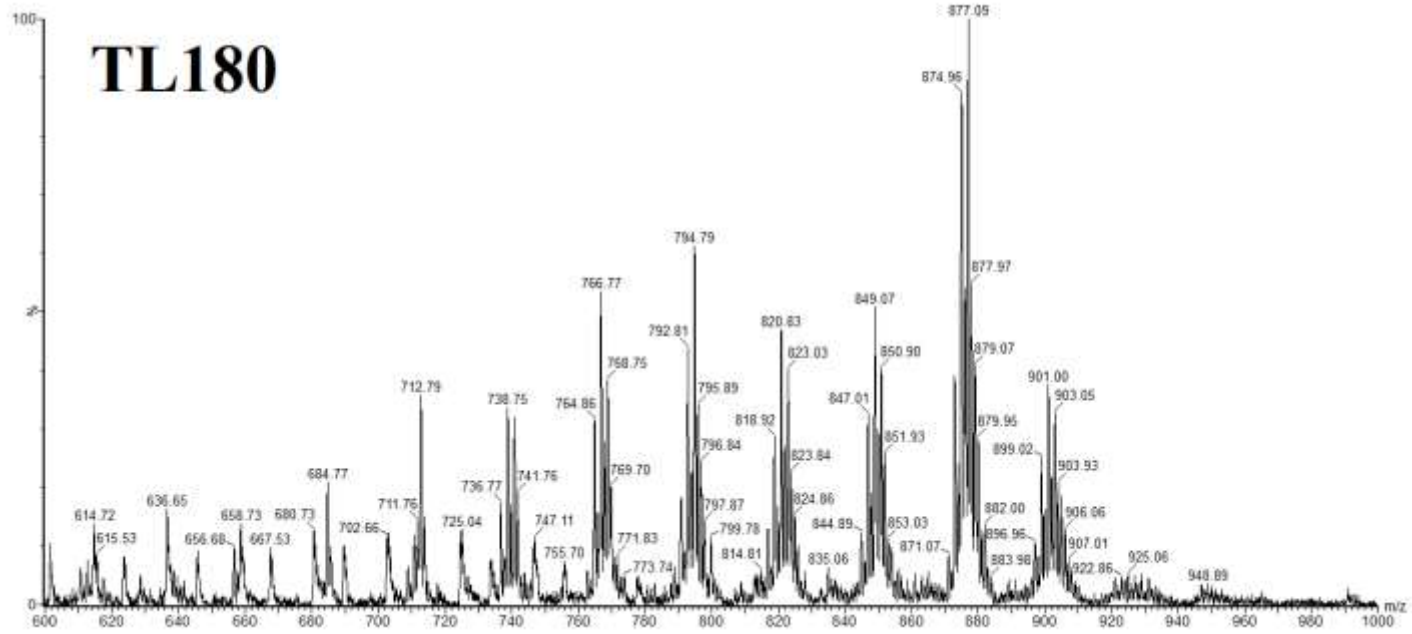

Figure S25. Lipid profile of the lyophilized transitional human milk sample stored for 180 days (TL180).

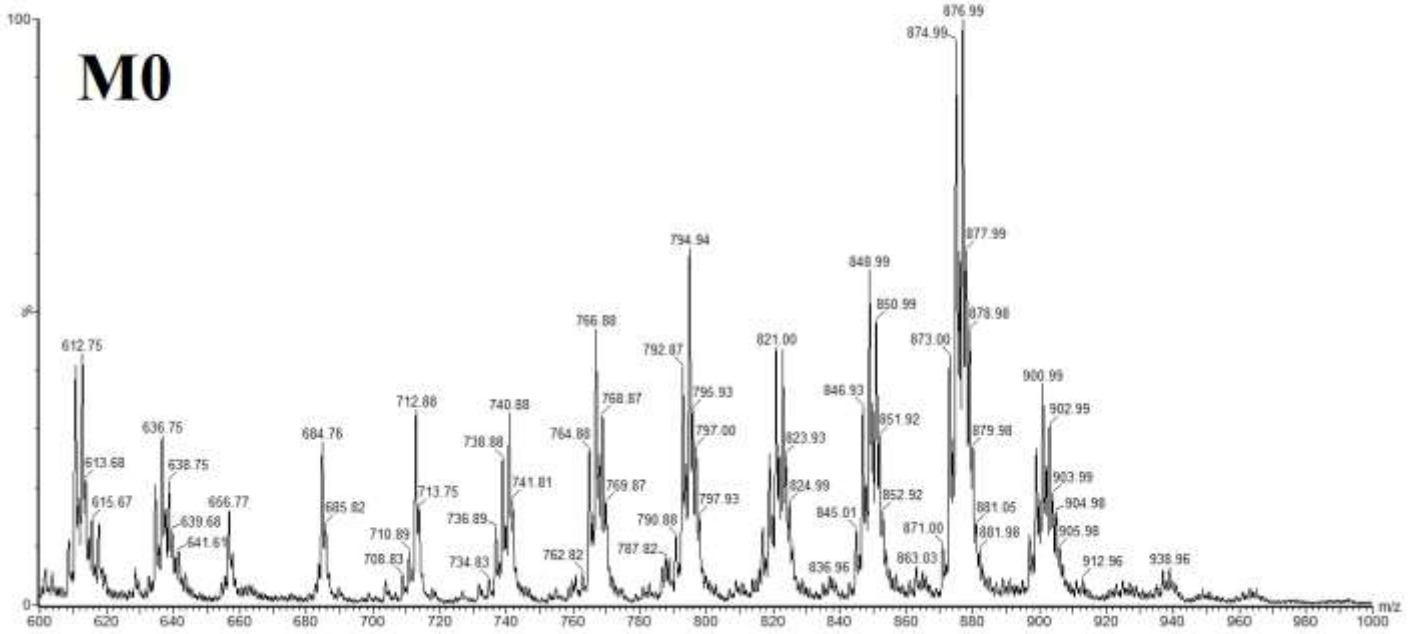

Figure S26. Lipid profile of the mature human milk before lyophilization (M0).

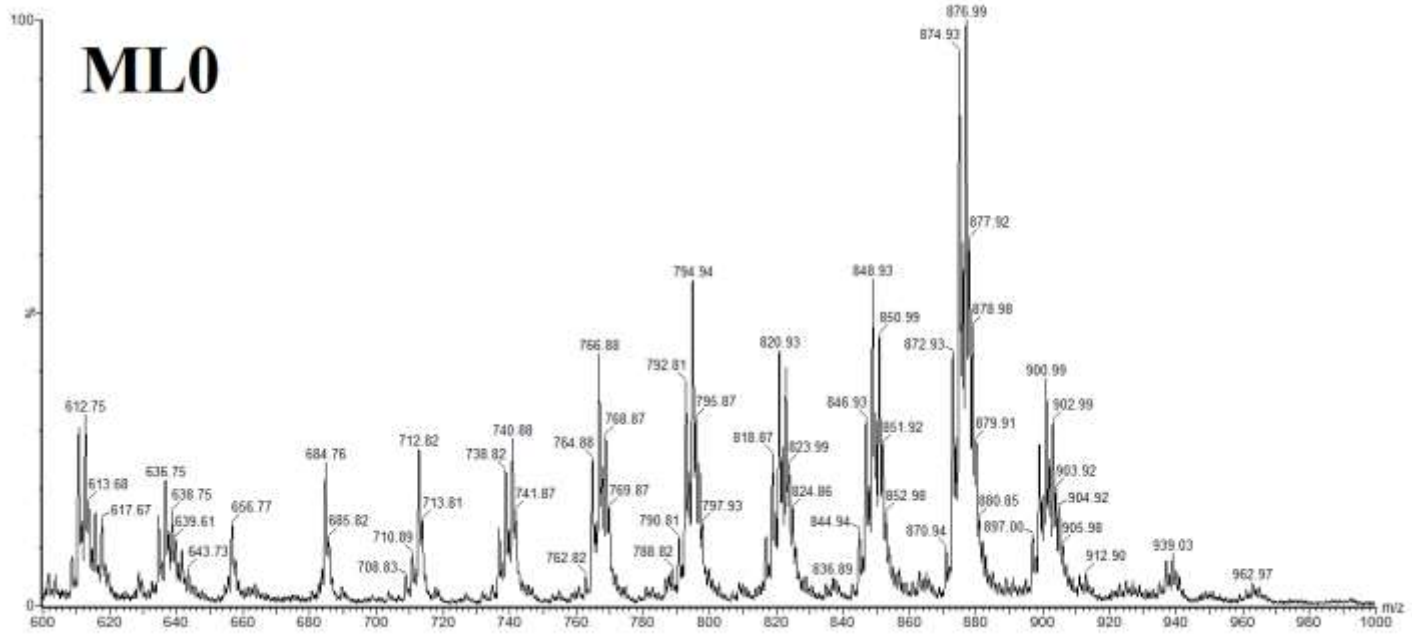

Figure S27. Lipid profile of the lyophilized mature human milk sample stored for 1 day (ML0).

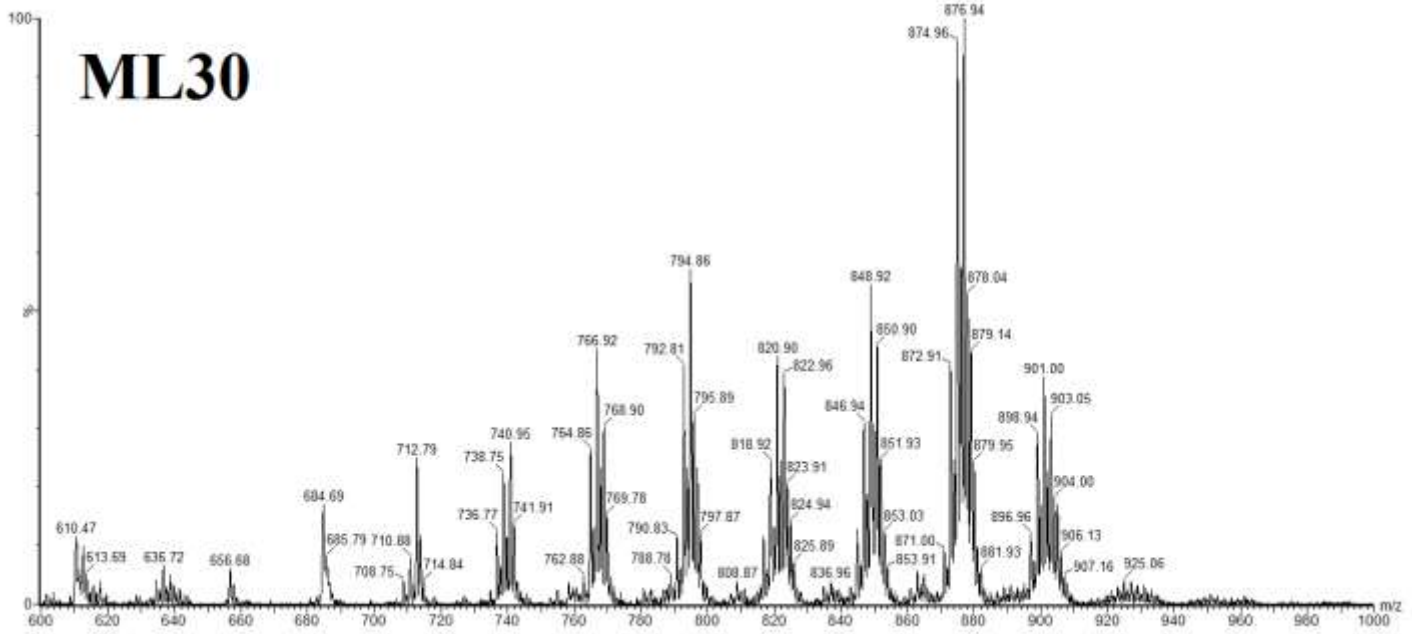

Figure S28. Lipid profile of the lyophilized mature human milk sample stored for 30 days (ML30).

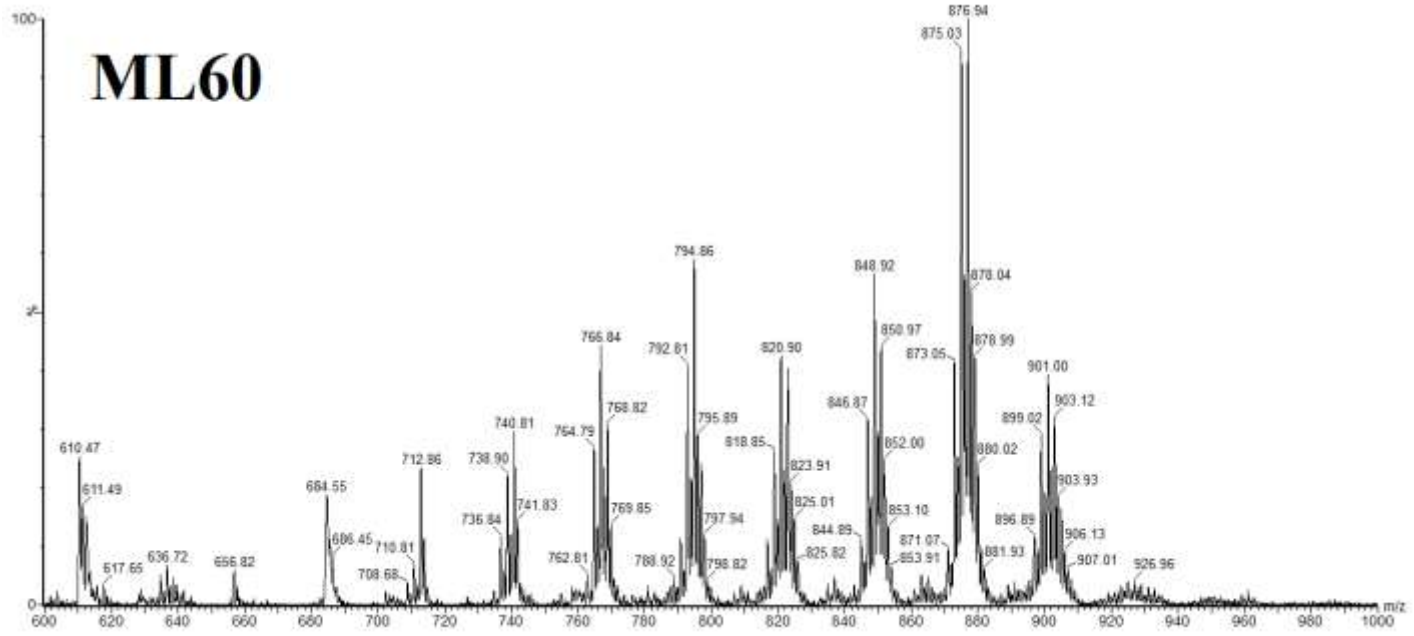

Figure S29. Lipid profile of the lyophilized mature human milk sample stored for 60 days (ML60).

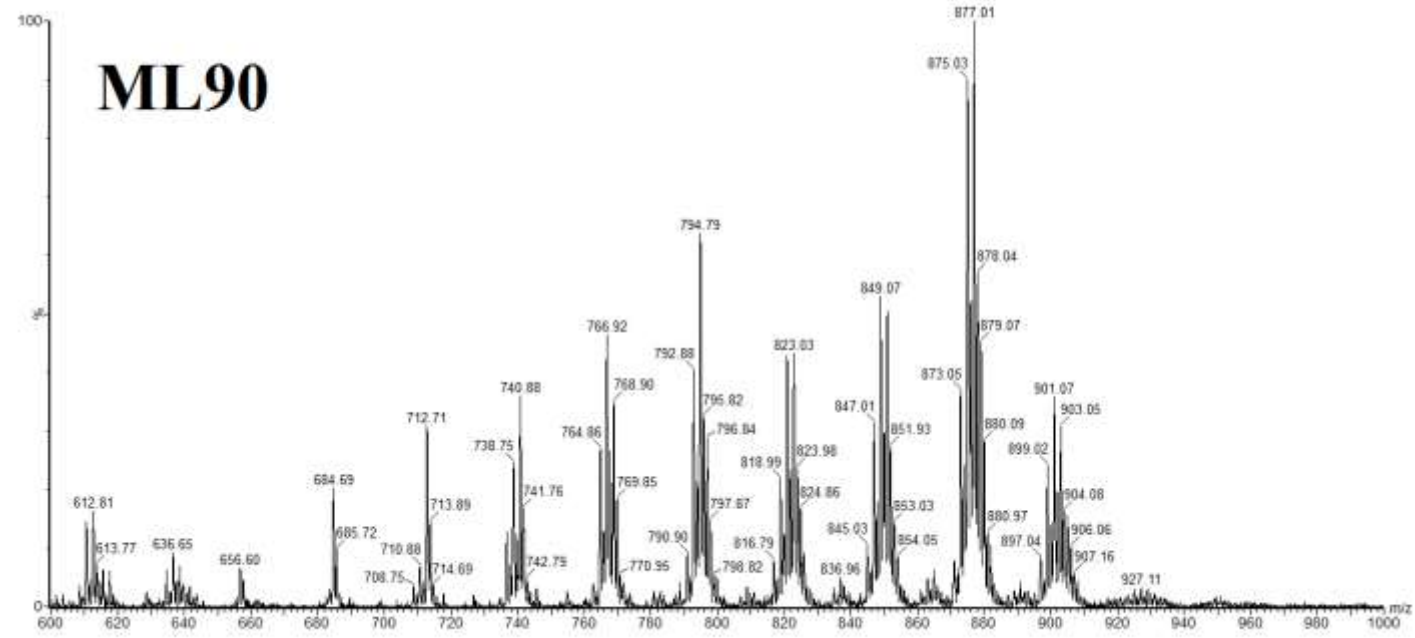

Figure S30. Lipid profile of the lyophilized mature human milk sample stored for 90 days (ML90).

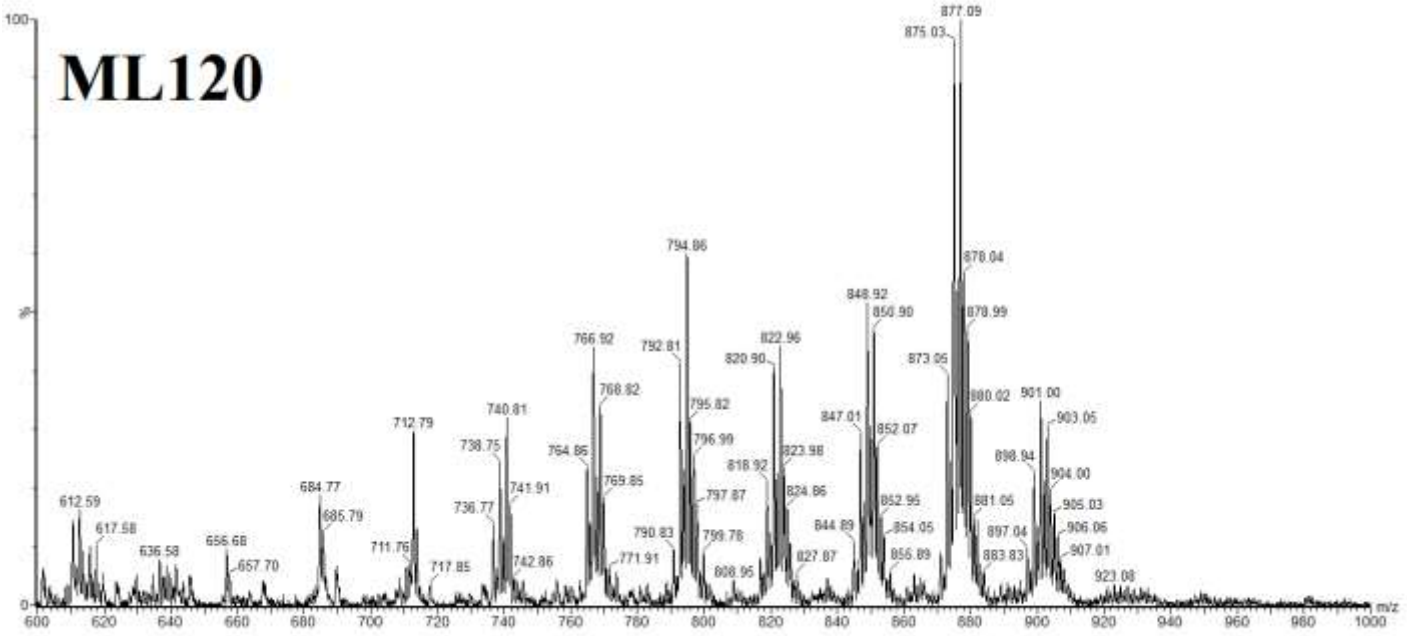

Figure S31. Lipid profile of the lyophilized mature human milk sample stored for 120 days (ML120).

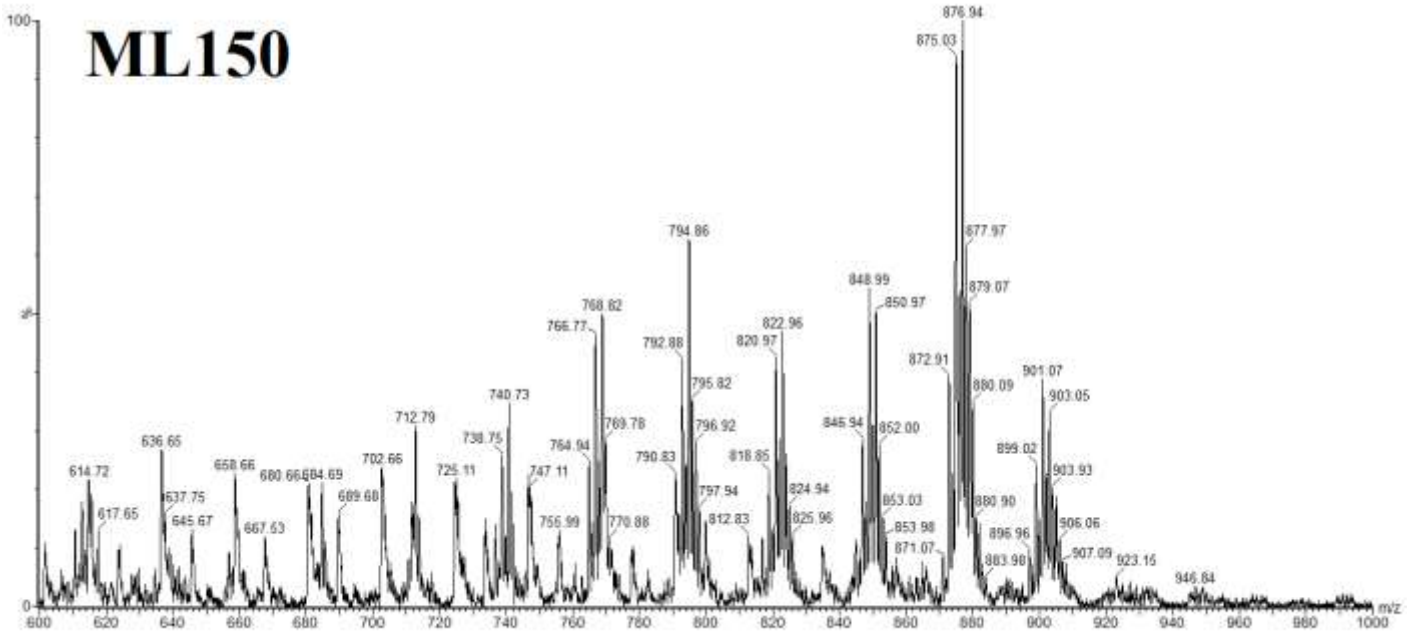

Figure S32. Lipid profile of the lyophilized mature human milk sample stored for 150 days (ML150).

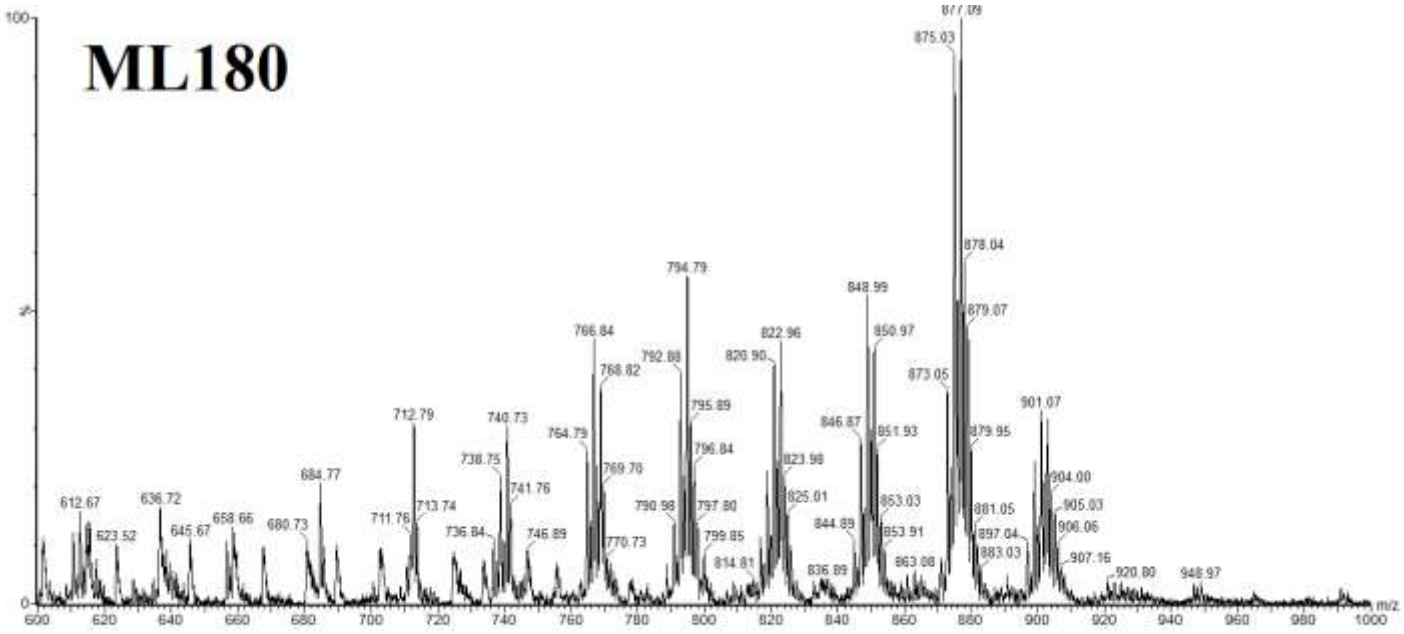

Figure S33. Lipid profile of the lyophilized mature human milk sample stored for 180 days (ML180).