

*Appendix*

Comparison of lipid structure and composition in human or cow milk with  
different fat globules by homogenization

Pu Zhao <sup>1,2</sup>, Dan Li <sup>1,2</sup>, Xinghe Zhang <sup>1,2</sup>, Xingwang Ye <sup>3,4</sup>, Zhiqiang Zhang <sup>3,4</sup>, Zhengdong Liu  
<sup>3,4</sup>, Zhiyuan Yan <sup>3,4</sup>, Wei Wei <sup>1,2,\*</sup>, Qingzhe Jin <sup>1,2</sup>, Xingguo Wang <sup>1,2,\*</sup>

<sup>1</sup> *State Key Lab of Food Science and Technology, Jiangnan University, Wuxi 214122, China.*

<sup>2</sup> *Collaborative Innovation Center of Food Safety and Quality Control in Jiangsu Province, School of Food  
Science and Technology, Jiangnan University, Wuxi 214122, China.*

<sup>3</sup> *Inner Mongolia Mengniu Dairy (Group) Co. Ltd., Huhhot 011500, China.*

<sup>4</sup> *Yashili International Group Ltd., Guangzhou 510335, China.*

\*Corresponding authors:

Xingguo Wang

Tel./Fax: +86 510 85876799

Email address: [xingguow@jiangnan.edu.cn](mailto:xingguow@jiangnan.edu.cn); [wangxg1002@gmail.com](mailto:wangxg1002@gmail.com)

Wei Wei

Tel./Fax: +86 510 85329050

Email address: [weiw@jiangnan.edu.cn](mailto:weiw@jiangnan.edu.cn)

**Table S1.** TAG compositions (%) in human milk with different fat globules by homogenization.

TAG	Abbreviations	LHM	MHM	SHM
12:0/16:0/10:0	La-P-Ca	0.05 ± 0.01	0.03 ± 0.01	0.02 ± 0.01
14:0/14:0/10:0	M-M-Ca	0.02 ± 0.00	0.01 ± 0.00	ND
14:0/12:0/12:0	M-La-La	0.05 ± 0.01	0.03 ± 0.01	0.02 ± 0.01
18:1/16:0/6:0	O-P-Co	0.24 ± 0.04	0.07 ± 0.01	0.06 ± 0.00
18:2/16:0/8:0	L-P-Cy	0.08 ± 0.10	0.01 ± 0.00	0.01 ± 0.00
18:2/14:0/10:0	L-M-Ca	0.11 ± 0.02	0.05 ± 0.00	0.06 ± 0.01
18:2/12:0/12:0	L-La-La	0.17 ± 0.08	0.10 ± 0.00	0.10 ± 0.01
18:0/14:0/8:0	S-M-Cy	0.01 ± 0.00	ND	ND
18:0/10:0/12:0	S-Ca-La	0.03 ± 0.00	0.02 ± 0.00	0.01 ± 0.00
16:0/12:0/12:0	P-La-La	0.08 ± 0.00	0.05 ± 0.01	0.05 ± 0.00
14:0/16:0/10:0	M-P-Ca	0.07 ± 0.00	0.04 ± 0.01	0.04 ± 0.00
14:0/14:0/12:0	M-M-La	0.02 ± 0.00	0.02 ± 0.00	0.01 ± 0.00
18:1/12:0/12:0	O-La-La	0.36 ± 0.02	0.18 ± 0.03	0.16 ± 0.00
18:1/14:0/10:0	O-M-Ca	0.16 ± 0.06	0.06 ± 0.01	0.05 ± 0.00
16:1/14:0/12:0	Po-M-La	0.04 ± 0.00	0.02 ± 0.00	0.02 ± 0.00
18:2/16:0/10:0	L-P-Ca	0.38 ± 0.17	0.27 ± 0.03	0.13 ± 0.00
18:2/14:0/12:0	L-M-La	0.41 ± 0.17	0.23 ± 0.02	0.27 ± 0.01
18:2/12:0/18:2	L-La-L	0.81 ± 0.03	0.55 ± 0.05	0.47 ± 0.01
18:2/18:2/18:3	L-L-Ln	0.44 ± 0.04	0.34 ± 0.05	0.30 ± 0.05
18:0/12:0/12:0	S-La-La	0.07 ± 0.01	0.04 ± 0.00	0.04 ± 0.00
18:0/14:0/10:0	S-M-Ca	0.03 ± 0.01	0.01 ± 0.00	0.01 ± 0.00
14:0/16:0/12:0	M-P-La	0.10 ± 0.01	0.06 ± 0.00	0.06 ± 0.00
16:0/16:0/10:0	P-P-Ca	0.10 ± 0.02	0.08 ± 0.00	0.07 ± 0.00
14:0/14:0/14:0	M-M-M	0.02 ± 0.01	0.01 ± 0.00	0.01 ± 0.00
18:1/16:0/10:0	O-P-Ca	0.49 ± 0.06	0.43 ± 0.04	0.43 ± 0.05
18:1/14:0/12:0	O-M-La	0.73 ± 0.09	0.38 ± 0.05	0.27 ± 0.08
18:2/16:0/12:0	L-P-La	1.43 ± 0.09	1.09 ± 0.23	0.97 ± 0.13
18:2/14:0/14:0	L-M-M	0.08 ± 0.01	0.15 ± 0.00	0.15 ± 0.06
18:1/12:0/18:2	O-La-L	1.65 ± 0.10	1.47 ± 0.35	1.46 ± 0.04
18:1/16:1/14:1	O-Po-Mo	0.02 ± 0.00	0.02 ± 0.01	0.02 ± 0.00
16:1/16:1/16:1	Po-Po-Po	0.02 ± 0.01	0.01 ± 0.00	0.01 ± 0.01
18:2/14:0/18:2	L-M-L	0.87 ± 0.05	0.96 ± 0.43	1.14 ± 0.53
18:2/18:2/18:2	L-L-L	2.52 ± 0.34	2.33 ± 0.49	2.27 ± 0.05
18:2/16:0/18:3	L-P-Ln	0.78 ± 0.08	0.98 ± 0.02	0.99 ± 0.10
18:0/10:0/16:0	S-Ca-P	0.11 ± 0.02	0.13 ± 0.01	0.12 ± 0.01
18:0/14:0/12:0	S-M-La	0.10 ± 0.06	0.06 ± 0.01	0.05 ± 0.00
16:0/16:0/12:0	P-P-La	0.11 ± 0.01	0.11 ± 0.01	0.11 ± 0.01

16:0/14:0/14:0	P-M-M	0.09 ± 0.04	0.05 ± 0.01	0.05 ± 0.00
18:1/16:0/12:0	O-P-La	1.65 ± 0.06	1.09 ± 0.00	1.01 ± 0.04
18:1/14:0/14:0	O-M-M	0.13 ± 0.05	0.14 ± 0.05	0.14 ± 0.02
18:1/12:0/18:1	O-La-O	1.30 ± 0.04	0.91 ± 0.07	0.91 ± 0.08
18:1/14:0/16:1	O-M-Po	0.16 ± 0.00	0.11 ± 0.04	0.10 ± 0.04
18:0/12:0/18:2	S-La-L	0.51 ± 0.07	0.53 ± 0.15	0.59 ± 0.23
18:2/16:0/14:0	L-P-M	0.58 ± 0.14	0.76 ± 0.16	0.68 ± 0.04
18:1/14:0/18:2	O-M-L	1.49 ± 0.01	1.32 ± 0.03	1.68 ± 0.14
18:1/16:1/16:1	O-Po-Po	0.13 ± 0.02	0.08 ± 0.05	0.08 ± 0.07
18:2/16:0/16:1	L-P-Po	0.30 ± 0.15	0.31 ± 0.03	0.48 ± 0.03
18:1/16:0/18:3	O-P-Ln	3.75 ± 0.58	1.82 ± 0.16	2.95 ± 2.03
18:2/16:0/18:2	L-P-L	3.07 ± 0.03	4.75 ± 0.99	4.08 ± 2.11
18:1/18:2/18:2	O-L-L	6.13 ± 0.06	6.35 ± 0.07	6.21 ± 0.39
18:0/18:2/18:3	S-L-Ln	0.77 ± 0.15	0.46 ± 0.20	0.85 ± 0.05
18:1/18:1/18:3	O-O-Ln	1.31 ± 0.28	0.97 ± 0.12	0.85 ± 0.11
18:0/16:0/12:0	S-P-La	0.23 ± 0.01	0.21 ± 0.00	0.27 ± 0.05
18:0/14:0/14:0	S-M-M	0.07 ± 0.02	0.01 ± 0.00	0.07 ± 0.01
16:0/16:0/14:0	P-P-M	0.05 ± 0.00	0.17 ± 0.00	0.05 ± 0.01
18:0/12:0/18:1	S-La-O	0.48 ± 0.09	0.19 ± 0.04	0.31 ± 0.06
18:1/16:0/14:0	O-P-M	0.83 ± 0.02	0.96 ± 0.11	0.99 ± 0.13
18:1/14:0/18:1	O-M-O	1.39 ± 0.03	1.25 ± 0.03	1.17 ± 0.02
18:1/16:0/16:1	O-P-Po	0.75 ± 0.14	0.60 ± 0.14	0.67 ± 0.01
18:0/14:0/18:2	S-M-L	0.25 ± 0.03	0.52 ± 0.12	0.42 ± 0.03
16:0/16:0/18:2	P-P-L	1.94 ± 0.11	2.11 ± 0.25	2.37 ± 0.10
18:1/16:0/18:2	O-P-L	15.15 ± 0.82	14.81 ± 0.60	14.76 ± 1.03
18:1/18:1/18:2	O-O-L	7.51 ± 0.01	7.50 ± 0.01	7.37 ± 0.27
18:1/16:1/18:1	O-Po-O	2.78 ± 0.13	3.04 ± 0.66	3.06 ± 0.62
18:0/18:2/18:2	S-L-L	2.95 ± 0.38	3.42 ± 0.11	3.22 ± 0.46
18:2/16:0/17:0	L-P-Ha	0.21 ± 0.01	0.21 ± 0.06	0.19 ± 0.16
18:0/16:0/14:0	S-M-P	0.12 ± 0.01	0.15 ± 0.01	0.18 ± 0.05
16:0/16:0/16:0	P-P-P	0.14 ± 0.01	0.18 ± 0.01	0.22 ± 0.06
18:0/14:0/18:1	S-M-O	0.44 ± 0.04	0.44 ± 0.09	0.51 ± 0.02
18:1/16:0/16:0	O-P-P	2.67 ± 0.11	2.80 ± 0.08	2.36 ± 0.54
18:1/16:0/18:1	O-P-O	11.74 ± 0.27	12.12 ± 0.35	11.79 ± 0.03
20:2/16:0/18:1	Ed-P-O	0.23 ± 0.04	0.44 ± 0.14	0.36 ± 0.11
18:1/18:1/18:1	O-O-O	3.52 ± 0.17	3.24 ± 0.28	3.43 ± 0.36
18:0/16:0/18:2	S-P-L	3.37 ± 0.19	4.48 ± 0.00	4.09 ± 0.01
18:0/18:2/18:1	S-L-O	2.80 ± 0.02	3.76 ± 0.04	3.71 ± 0.49
18:0/15:0/18:1	S-Pa-O	0.03 ± 0.00	0.04 ± 0.01	0.03 ± 0.00
18:1/16:0/17:0	O-P-Ha	0.14 ± 0.00	0.17 ± 0.05	0.11 ± 0.02

16:0/16:0/18:0	P-P-S	0.31 ± 0.04	0.38 ± 0.04	0.46 ± 0.05
18:0/16:0/18:1	S-P-O	2.84 ± 0.02	3.22 ± 0.32	3.29 ± 0.21
18:1/18:0/18:1	O-S-O	1.29 ± 0.07	1.51 ± 0.08	1.42 ± 0.02
20:1/16:0/18:1	Eo-P-O	0.12 ± 0.03	0.23 ± 0.02	0.13 ± 0.03
18:0/18:0/18:2	S-S-L	0.31 ± 0.07	0.39 ± 0.04	0.54 ± 0.17
20:0/16:0/18:2	E-P-L	0.05 ± 0.02	0.05 ± 0.01	0.13 ± 0.01
18:1/20:0/18:2	O-E-L	0.38 ± 0.02	0.46 ± 0.01	0.61 ± 0.07
18:0/18:0/16:0	S-S-P	0.18 ± 0.00	0.27 ± 0.03	0.27 ± 0.04
20:0/16:0/18:1	E-P-O	0.13 ± 0.00	0.16 ± 0.00	0.19 ± 0.02
18:0/18:0/18:1	S-S-O	0.11 ± 0.00	0.13 ± 0.00	0.16 ± 0.02
22:0/18:2/16:0	Do-L-P	0.21 ± 0.03	0.23 ± 0.01	0.24 ± 0.04
20:0/18:1/18:1	E-O-O	0.05 ± 0.01	0.06 ± 0.00	0.06 ± 0.01
22:0/16:0/16:0	Do-P-P	0.01 ± 0.00	ND	0.01 ± 0.00
20:0/16:0/18:0	E-P-S	0.04 ± 0.01	ND	0.06 ± 0.01
18:0/18:0/18:0	S-S-S	0.01 ± 0.00	ND	0.02 ± 0.01
22:0/16:0/18:1	Do-P-O	0.05 ± 0.01	ND	0.04 ± 0.00
18:0/20:0/18:1	S-E-O	0.02 ± 0.00	ND	0.02 ± 0.00

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The values are represented as the means ± SD.

**Table S2.** TAG compositions (%) in cow milk with different fat globules by homogenization.

TAG	Abbreviations	LCM	MCM	SCM
4:0/6:0/16:0	Co-B-P	0.12 ± 0.01	0.09 ± 0.00	0.14 ± 0.01
4:0/8:0/14:0	B-Cy-M	0.08 ± 0.01	0.08 ± 0.00	0.03 ± 0.00
4:0/18:1/6:0	B-O-Co	0.10 ± 0.00	0.09 ± 0.00	0.10 ± 0.00
4:0/14:0/10:0	B-M-C	0.15 ± 0.01	0.13 ± 0.00	0.11 ± 0.00
4:0/18:0/6:0	B-S-Co	0.05 ± 0.00	0.01 ± 0.00	ND
6:0/14:0/8:0	Co-M-Cy	0.09 ± 0.01	0.13 ± 0.00	0.12 ± 0.00
8:0/4:0/16:0	Cy-B-P	0.28 ± 0.02	0.18 ± 0.00	0.18 ± 0.00
8:0/4:0/18:1	Cy-B-O	0.25 ± 0.02	0.21 ± 0.01	0.21 ± 0.01
10:0/6:0/14:0	Ca-Co-M	0.29 ± 0.02	0.29 ± 0.00	0.35 ± 0.01
4:0/10:0/16:0	B-Ca-P	0.58 ± 0.04	0.35 ± 0.01	0.34 ± 0.01
10:0/8:0/12:0	Ca-Cy-La	0.22 ± 0.02	0.26 ± 0.00	0.20 ± 0.01
12:0/6:0/14:1	La-Co-Mo	0.08 ± 0.01	0.08 ± 0.00	0.08 ± 0.00
6:0/10:0/16:1	Co-Ca-Po	0.05 ± 0.01	0.05 ± 0.00	0.02 ± 0.00
4:0/10:0/18:1	B-Ca-O	0.39 ± 0.04	0.33 ± 0.02	0.36 ± 0.01
12:0/6:0/14:0	La-Co-Mo	0.69 ± 0.03	0.67 ± 0.03	0.77 ± 0.04
4:0/10:0/18:0	B-Ca-S	0.59 ± 0.03	0.51 ± 0.02	0.46 ± 0.02
12:0/4:0/16:0	La-B-P	0.91 ± 0.04	0.85 ± 0.04	0.68 ± 0.04
12:0/10:0/10:0	La-Ca-Ca	0.21 ± 0.01	0.23 ± 0.01	0.23 ± 0.01
4:0/14:0/15:0	B-M-Pa	0.26 ± 0.00	0.33 ± 0.08	0.35 ± 0.03
4:0/12:0/18:2	B-La-L	0.13 ± 0.02	0.12 ± 0.00	0.12 ± 0.00
4:0/12:0/18:1	B-La-O	1.12 ± 0.03	1.06 ± 0.02	1.02 ± 0.04
6:0/12:0/16:0	Co-La-P	0.97 ± 0.08	0.99 ± 0.03	0.92 ± 0.03
14:0/4:0/16:0	M-B-P	5.01 ± 0.20	4.80 ± 0.40	4.51 ± 0.06
4:0/12:0/18:0	B-La-S	0.45 ± 0.02	0.34 ± 0.03	0.36 ± 0.00
14:0/6:0/15:0	M-Co-Pa	0.34 ± 0.01	0.47 ± 0.01	0.05 ± 0.00
4:0/15:0/16:0	B-Pa-P	0.64 ± 0.01	0.48 ± 0.01	0.51 ± 0.04
6:0/16:0/14:0	Co-P-M	2.34 ± 0.00	2.35 ± 0.24	2.23 ± 0.03
16:0/4:0/16:0	P-B-P	9.27 ± 0.58	8.75 ± 1.17	9.02 ± 0.84
14:0/4:0/18:2	M-B-L	0.36 ± 0.01	0.38 ± 0.00	0.38 ± 0.01
14:1/4:0/18:1	Mo-B-O	0.07 ± 0.00	0.05 ± 0.00	0.07 ± 0.00
16:1/4:0/16:0	Po-B-P	1.21 ± 0.01	1.11 ± 0.02	1.06 ± 0.04
14:0/4:0/18:1	M-B-O	2.14 ± 0.01	2.17 ± 0.03	2.11 ± 0.08
4:0/15:0/18:1	B-Pa-O	0.34 ± 0.00	0.35 ± 0.00	0.30 ± 0.00
4:0/18:0/15:0	B-S-Pa	0.09 ± 0.01	0.23 ± 0.00	0.21 ± 0.02
16:0/4:0/17:0	P-B-Ha	0.19 ± 0.01	0.31 ± 0.00	0.39 ± 0.04
6:0/15:0/16:0	Co-Pa-P	0.26 ± 0.02	0.27 ± 0.00	0.18 ± 0.02
16:0/6:0/16:0	P-Co-P	0.29 ± 0.02	0.57 ± 0.02	0.27 ± 0.02

14:0/10:0/14:0	M-C-M	0.55 ± 0.03	0.30 ± 0.01	1.55 ± 0.10
8:0/14:0/16:0	Cy-M-P	3.14 ± 0.19	3.56 ± 0.13	1.26 ± 0.08
16:0/10:0/12:0	P-C-La	1.08 ± 0.07	0.55 ± 0.02	1.93 ± 0.12
4:0/18:0/16:0	B-S-P	2.94 ± 0.02	2.94 ± 0.04	2.94 ± 0.10
6:0/14:0/18:1	Co-M-O	1.08 ± 0.14	1.16 ± 0.06	1.10 ± 0.20
16:0/4:0/18:1	P-B-O	7.49 ± 0.02	7.03 ± 0.09	6.74 ± 0.31
16:0/4:0/18:2	P-B-L	1.09 ± 0.17	1.06 ± 0.02	1.08 ± 0.07
4:0/16:1/18:1	B-Po-O	0.20 ± 0.03	0.27 ± 0.01	0.25 ± 0.02
6:0/16:0/17:0	P-Co-Ha	0.12 ± 0.00	0.25 ± 0.01	0.23 ± 0.04
17:0/4:0/18:0	Ha-B-S	0.11 ± 0.00	0.15 ± 0.01	0.05 ± 0.01
15:0/8:0/16:0	Pa-Cy-P	0.20 ± 0.00	0.05 ± 0.00	0.13 ± 0.02
17:0/4:0/18:1	Ha-B-O	0.19 ± 0.01	0.20 ± 0.00	0.19 ± 0.01
15:0/6:0/18:1	Pa-P-O	0.19 ± 0.01	0.19 ± 0.00	0.17 ± 0.00
14:0/10:0/16:0	M-C-P	2.25 ± 0.04	2.08 ± 0.06	2.30 ± 0.22
10:0/18:0/12:0	C-S-La	0.39 ± 0.01	0.49 ± 0.01	0.41 ± 0.04
16:0/6:0/18:0	P-Co-S	1.25 ± 0.13	1.37 ± 0.09	1.17 ± 0.05
16:0/6:0/18:1	P-Co-O	3.42 ± 0.23	3.26 ± 0.14	3.22 ± 0.04
18:1/4:0/18:0	O-B-S	1.18 ± 0.06	1.33 ± 0.06	1.28 ± 0.02
18:1/4:0/18:1	O-B-O	1.69 ± 0.14	1.91 ± 0.01	1.82 ± 0.08
6:0/16:1/18:1	Co-Po-O	0.25 ± 0.02	0.07 ± 0.00	0.14 ± 0.01
18:2/4:0/18:1	L-B-O	0.46 ± 0.04	0.46 ± 0.02	0.45 ± 0.00
15:0/10:0/16:0	Pa-C-P	0.18 ± 0.01	0.17 ± 0.01	0.20 ± 0.04
14:0/17:0/10:0	M-Ha-C	0.07 ± 0.00	0.09 ± 0.01	0.07 ± 0.01
16:0/10:0/16:0	P-C-P	1.92 ± 0.10	1.92 ± 0.13	1.96 ± 0.16
12:0/16:0/14:0	La-P-M	0.81 ± 0.04	0.92 ± 0.06	1.13 ± 0.09
10:0/14:0/18:0	C-M-S	0.44 ± 0.02	0.32 ± 0.02	0.22 ± 0.02
16:0/8:0/18:1	P-Cy-O	1.17 ± 0.08	1.24 ± 0.06	1.24 ± 0.04
14:0/10:0/18:1	M-C-O	0.57 ± 0.04	0.35 ± 0.02	0.49 ± 0.02
18:1/6:0/18:0	O-Co-S	0.74 ± 0.01	0.83 ± 0.08	0.69 ± 0.13
15:0/12:0/16:0	Pa-La-P	0.14 ± 0.02	0.15 ± 0.03	0.15 ± 0.03
10:0/18:0/15:0	C-P-Pa	0.05 ± 0.01	0.04 ± 0.01	0.05 ± 0.01
16:0/18:0/10:0	P-S-C	1.23 ± 0.04	1.14 ± 0.05	1.31 ± 0.03
12:0/18:0/14:0	La-S-M	0.93 ± 0.03	0.94 ± 0.04	1.00 ± 0.03
14:0/16:0/14:0	M-P-M	0.30 ± 0.01	0.36 ± 0.02	0.29 ± 0.01
16:0/10:0/18:1	P-C-O	1.82 ± 0.05	1.83 ± 0.06	1.93 ± 0.02
14:0/12:0/18:1	M-La-O	0.59 ± 0.02	0.67 ± 0.02	0.60 ± 0.01
18:1/8:0/18:1	O-Cy-O	0.30 ± 0.00	0.33 ± 0.01	0.32 ± 0.00
16:0/10:0/18:2	P-C-L	0.40 ± 0.00	0.38 ± 0.01	0.40 ± 0.00
16:0/14:0/16:0	P-M-P	1.47 ± 0.08	1.50 ± 0.08	1.62 ± 0.00
14:0/18:0/14:0	M-S-M	0.25 ± 0.01	0.15 ± 0.01	0.32 ± 0.00

16:0/12:0/18:0	P-La-S	0.48 ± 0.03	0.53 ± 0.03	0.54 ± 0.00
16:0/12:0/18:1	P-La-O	2.08 ± 0.00	2.19 ± 0.02	2.31 ± 0.03
18:0/10:0/18:1	S-C-O	0.36 ± 0.00	0.36 ± 0.00	0.33 ± 0.00
16:0/14:0/18:0	P-M-S	1.28 ± 0.18	1.28 ± 0.01	1.25 ± 0.02
16:0/16:0/16:0	P-P-P	0.89 ± 0.12	0.78 ± 0.01	0.95 ± 0.02
16:0/14:0/18:1	P-M-O	3.78 ± 0.31	4.19 ± 0.43	4.37 ± 0.41
16:0/14:1/18:1	P-Mo-O	0.38 ± 0.05	0.38 ± 0.00	0.37 ± 0.02
18:1/12:0/18:1	O-La-O	0.18 ± 0.02	0.15 ± 0.00	0.22 ± 0.01
16:0/14:0/18:2	P-M-L	0.49 ± 0.08	0.56 ± 0.01	0.52 ± 0.06
16:0/15:0/18:1	P-Pa-O	0.28 ± 0.01	0.31 ± 0.00	0.33 ± 0.00
16:0/18:0/16:0	P-S-P	1.21 ± 0.12	1.02 ± 0.05	1.19 ± 0.01
16:0/18:1/16:0	P-O-P	6.19 ± 1.06	6.67 ± 1.11	6.84 ± 0.88
16:0/16:1/18:1	P-Po-O	0.69 ± 0.07	0.75 ± 0.06	0.81 ± 0.12
18:1/14:0/18:1	O-M-O	0.37 ± 0.04	0.46 ± 0.04	0.39 ± 0.06
16:0/18:2/16:0	P-L-P	0.74 ± 0.03	0.78 ± 0.07	0.81 ± 0.01
18:0/16:0/18:0	S-P-S	0.28 ± 0.01	0.24 ± 0.05	0.29 ± 0.04
18:1/16:0/18:0	O-P-S	2.00 ± 0.32	2.13 ± 0.23	2.14 ± 0.15
18:1/16:0/18:1	O-P-O	3.23 ± 0.58	3.69 ± 0.75	3.53 ± 0.49
16:0/18:1/18:2	P-O-L	0.76 ± 0.06	0.82 ± 0.12	0.84 ± 0.00
18:1/18:0/18:1	O-S-O	0.51 ± 0.03	0.53 ± 0.05	0.57 ± 0.03
18:1/18:0/18:2	O-S-L	0.55 ± 0.07	0.58 ± 0.05	0.56 ± 0.07

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The values are represented as the means ± SD.

**Table S3.** Phospholipid compositions (%) in human and cow milk with different fat globules by homogenization.

Class	m/z	Adducts	Molecular species	Relative content (%)					
				LHM	MHM	SHM	LCM	MCM	SCM
LPC	482.3547117	[M+H] <sup>+</sup>	PC(O-16:0/0:0)	0.18 ± 0.02	0.22 ± 0.06	0.28 ± 0.02	0.39 ± 0.00	1.47 ± 0.08	1.28 ± 0.01
	468.3114852	[M+H] <sup>+</sup>	PC(14:0/0:0)	0.29 ± 0.04	0.45 ± 0.05	0.44 ± 0.01	3.46 ± 0.02	4.82 ± 0.04	4.77 ± 0.00
	520.3360712	[M+H] <sup>+</sup>	PC(18:2/0:0)	33.15 ± 2.23	32.29 ± 0.57	35.06 ± 0.62	8.89 ± 0.05	19.58 ± 0.38	13.41 ± 0.95
	544.3396071	[M+H] <sup>+</sup>	PC(20:4/0:0)	2.60 ± 0.23	2.57 ± 0.30	2.74 ± 0.04	1.50 ± 0.00	4.04 ± 0.14	2.57 ± 0.03
	518.3200121	[M+H] <sup>+</sup>	PC(18:3/0:0)	1.85 ± 0.20	2.48 ± 0.32	2.09 ± 0.05	1.93 ± 0.12	3.39 ± 0.12	3.21 ± 0.08
	522.3522322	[M+H] <sup>+</sup>	PC(18:1/0:0)	13.01 ± 0.16	11.53 ± 0.01	10.56 ± 0.38	21.29 ± 0.40	31.19 ± 0.04	25.25 ± 0.36
	510.3678584	[M+H] <sup>+</sup>	PC(17:0/0:0)	0.21 ± 0.02	0.27 ± 0.01	0.31 ± 0.03	0.01 ± 0.01	0.92 ± 0.07	0.71 ± 0.02
	496.3199088	[M+H] <sup>+</sup>	PC(16:0/0:0)	18.55 ± 0.99	21.09 ± 0.51	22.02 ± 0.90	31.41 ± 0.34	24.16 ± 1.06	29.85 ± 0.26
	524.3469632	[M+H] <sup>+</sup>	PC(18:0/0:0)	30.17 ± 3.88	29.09 ± 0.81	26.46 ± 0.72	31.13 ± 0.79	10.44 ± 1.18	18.93 ± 0.43
	480.3422715	[M+H] <sup>+</sup>	PC(O-16:1/0:0)	0.01 ± 0.00	0.02 ± 0.00	0.03 ± 0.03	ND	ND	ND
PS	840.5783589	[M-H] <sup>-</sup>	PS(22:0/18:3)	8.05 ± 0.29	10.30 ± 0.70	9.64 ± 0.10	11.50 ± 0.41	10.39 ± 0.32	12.13 ± 0.12
	790.5634472	[M-H] <sup>-</sup>	PS(20:0/16:0)	1.87 ± 0.06	1.31 ± 0.02	1.51 ± 0.07	28.09 ± 1.71	29.17 ± 0.10	27.95 ± 0.56
	802.5657307	[M-H] <sup>-</sup>	PS(19:0/18:1)	5.66 ± 0.12	4.76 ± 0.11	4.42 ± 0.13	7.23 ± 0.86	8.21 ± 0.54	7.34 ± 0.47
	858.5908368	[M-H] <sup>-</sup>	PS(20:1/21:0)	4.31 ± 0.19	5.80 ± 0.41	5.32 ± 0.43	6.74 ± 0.30	5.35 ± 0.17	6.24 ± 0.21
	804.5792778	[M-H] <sup>-</sup>	PS(19:0/18:0)	5.47 ± 0.41	4.57 ± 0.07	4.60 ± 0.20	14.67 ± 0.28	16.36 ± 0.35	15.23 ± 0.18
	830.5915356	[M-H] <sup>-</sup>	PS(21:0/18:1)	13.54 ± 0.38	12.07 ± 0.10	11.94 ± 0.52	5.80 ± 0.12	6.38 ± 0.45	6.24 ± 0.38
	868.6054034	[M-H] <sup>-</sup>	PS(22:0/20:3)	11.21 ± 0.01	10.90 ± 0.53	11.38 ± 0.10	4.82 ± 0.09	3.59 ± 0.28	4.16 ± 0.07
	860.6062115	[M-H] <sup>-</sup>	PS(21:0/20:0)	49.90 ± 0.14	50.29 ± 1.11	51.18 ± 0.05	21.14 ± 0.21	20.55 ± 0.76	20.70 ± 0.21
PA	761.5833392	[M-H] <sup>-</sup>	PA(O-20:0/22:6)	ND	ND	ND	3.73 ± 0.07	2.80 ± 0.50	4.54 ± 0.69
	697.4843875	[M-H] <sup>-</sup>	PA(18:2/18:1)	12.01 ± 0.59	12.44 ± 1.75	12.81 ± 0.20	14.69 ± 3.23	10.54 ± 0.53	12.48 ± 0.81
	673.4844665	[M-H] <sup>-</sup>	PA(18:1/16:0)	10.18 ± 0.27	12.43 ± 0.03	9.83 ± 0.47	28.55 ± 2.38	36.62 ± 0.24	33.78 ± 0.41
	725.5151726	[M-H] <sup>-</sup>	PA(18:0/20:3)	34.63 ± 0.50	34.15 ± 0.37	34.62 ± 0.25	13.52 ± 1.30	7.51 ± 0.16	9.64 ± 0.05
	699.5000022	[M-H] <sup>-</sup>	PA(18:2/18:0)	43.18 ± 0.81	40.98 ± 2.09	42.74 ± 0.43	39.27 ± 2.07	42.08 ± 0.35	39.24 ± 1.11



	635.4404275	[M-H] <sup>-</sup>	PA(P-16:0/12:0)	ND	ND	ND	0.24 ± 0.02	0.45 ± 0.02	0.32 ± 0.09
LPE	524.2825112	[M-H] <sup>-</sup>	PE(22:6/0:0)	4.13 ± 0.22	5.16 ± 0.47	5.88 ± 0.15	ND	0.03 ± 0.01	ND
	498.2629773	[M-H] <sup>-</sup>	PE(20:5/0:0)	0.96 ± 0.35	1.33 ± 0.16	1.56 ± 0.01	0.10 ± 0.15	1.42 ± 0.00	1.22 ± 0.11
	476.2757835	[M-H] <sup>-</sup>	PE(18:2/0:0)	26.48 ± 0.00	27.43 ± 0.07	27.18 ± 0.24	22.01 ± 0.64	28.47 ± 0.40	28.65 ± 0.73
	526.2956117	[M-H] <sup>-</sup>	PE(22:5/0:0)	2.65 ± 0.22	2.92 ± 0.09	3.22 ± 0.09	ND	1.12 ± 0.02	0.90 ± 0.07
	500.2784537	[M-H] <sup>-</sup>	PE(20:4/0:0)	13.85 ± 0.55	13.80 ± 0.15	16.15 ± 0.04	6.11 ± 0.37	10.44 ± 0.07	10.18 ± 0.09
	452.2792834	[M-H] <sup>-</sup>	PE(16:0/0:0)	3.92 ± 0.14	4.00 ± 0.01	3.92 ± 0.07	8.34 ± 0.10	4.53 ± 0.06	4.71 ± 0.13
	528.3103585	[M-H] <sup>-</sup>	PE(22:4/0:0)	2.68 ± 0.02	2.91 ± 0.04	3.43 ± 0.13	ND	1.28 ± 0.12	0.92 ± 0.11
	478.2909952	[M-H] <sup>-</sup>	PE(18:1/0:0)	39.98 ± 0.88	37.16 ± 0.21	32.86 ± 0.35	63.44 ± 0.32	52.53 ± 0.55	53.35 ± 1.02
	506.3267053	[M-H] <sup>-</sup>	PE(20:1/0:0)	3.49 ± 0.05	3.70 ± 0.18	3.80 ± 0.21	ND	0.18 ± 0.04	0.08 ± 0.00
	436.2777662	[M-H] <sup>-</sup>	PE(P-16:0/0:0)	0.89 ± 0.03	0.76 ± 0.02	0.86 ± 0.09	ND	ND	ND
	464.3126619	[M-H] <sup>-</sup>	PE(P-18:0/0:0)	0.97 ± 0.17	0.84 ± 0.03	1.14 ± 0.18	ND	ND	ND
PI	961.6214358	[M-H] <sup>-</sup>	PI(22:2/22:6)	0.05 ± 0.00	0.13 ± 0.00	0.22 ± 0.04	ND	ND	ND
	807.505932	[M-H] <sup>-</sup>	PI(18:1/14:0)	0.48 ± 0.04	0.80 ± 0.05	0.23 ± 0.20	1.87 ± 0.05	1.48 ± 0.01	1.28 ± 0.04
	859.5381315	[M-H] <sup>-</sup>	PI(18:2/18:1)	2.72 ± 0.14	3.51 ± 0.00	4.12 ± 0.12	8.48 ± 0.03	4.75 ± 0.14	5.57 ± 0.10
	883.5370049	[M-H] <sup>-</sup>	PI(18:1/20:4)	1.92 ± 0.07	2.41 ± 0.02	2.38 ± 0.19	6.25 ± 0.93	3.90 ± 0.10	4.31 ± 0.10
	833.5222357	[M-H] <sup>-</sup>	PI(18:2/16:0)	0.96 ± 0.06	1.19 ± 0.07	1.10 ± 0.07	3.03 ± 0.05	1.75 ± 0.07	2.13 ± 0.00
	835.5365838	[M-H] <sup>-</sup>	PI(18:1/16:0)	10.56 ± 0.26	11.20 ± 0.08	10.26 ± 0.13	14.53 ± 0.78	10.34 ± 0.01	10.18 ± 0.16
	861.5517509	[M-H] <sup>-</sup>	PI(18:2/18:0)	60.85 ± 1.02	59.37 ± 0.12	58.55 ± 0.77	47.75 ± 0.02	54.64 ± 0.18	53.20 ± 0.40
	885.5537968	[M-H] <sup>-</sup>	PI(20:4/18:0)	22.46 ± 0.45	21.39 ± 0.22	23.13 ± 0.43	18.08 ± 1.67	23.14 ± 0.01	23.33 ± 0.00
PE	712.5001938	[M-H] <sup>-</sup>	PE(18:3/16:0)	0.15 ± 0.03	0.21 ± 0.00	0.02 ± 0.02	1.38 ± 0.07	1.42 ± 0.04	1.46 ± 0.05
	762.5126842	[M-H] <sup>-</sup>	PE(P-16:0/22:6)	0.41 ± 0.01	0.55 ± 0.01	ND	0.50 ± 0.01	0.48 ± 0.03	0.57 ± 0.02
	736.4988673	[M-H] <sup>-</sup>	PE(20:5/16:0)	0.06 ± 0.08	0.13 ± 0.04	ND	0.51 ± 0.03	0.55 ± 0.03	0.56 ± 0.01
	686.4929663	[M-H] <sup>-</sup>	PE(14:0/18:2)	0.13 ± 0.03	0.05 ± 0.01	ND	1.10 ± 0.06	1.22 ± 0.01	1.11 ± 0.03
	738.5097834	[M-H] <sup>-</sup>	PE(P-16:0/20:4)	1.25 ± 0.05	2.16 ± 0.01	2.95 ± 0.15	4.84 ± 0.13	4.27 ± 0.09	4.85 ± 0.05
	764.5282514	[M-H] <sup>-</sup>	PE(P-18:1/20:4)	1.98 ± 0.13	2.47 ± 0.03	0.73 ± 0.02	2.60 ± 0.05	2.63 ± 0.08	2.77 ± 0.02
	790.5408862	[M-H] <sup>-</sup>	PE(P-18:0/22:6)	3.36 ± 0.26	3.92 ± 0.20	0.08 ± 0.11	0.93 ± 0.02	0.75 ± 0.03	0.88 ± 0.02

	740.5220862	[M-H] <sup>-</sup>	PE(18:0/18:3)	5.50 ± 0.34	8.22 ± 0.27	9.01 ± 0.03	14.30 ± 0.14	12.26 ± 0.30	14.10 ± 0.19
	724.5280921	[M-H] <sup>-</sup>	PE(P-18:0/18:3)	1.70 ± 0.08	1.30 ± 0.02	0.01 ± 0.02	0.46 ± 0.01	0.63 ± 0.02	0.49 ± 0.05
	714.5092062	[M-H] <sup>-</sup>	PE(18:2/16:0)	3.08 ± 0.32	2.66 ± 0.09	3.28 ± 0.01	8.59 ± 0.25	8.46 ± 0.06	8.46 ± 0.06
	656.4368862	[M-H] <sup>-</sup>	PE(12:0/18:3)	ND	0.01 ± 0.00	0.04 ± 0.01	ND	ND	ND
	698.5139371	[M-H] <sup>-</sup>	PE(P-16:0/18:2)	1.79 ± 0.21	1.22 ± 0.06	0.05 ± 0.01	0.85 ± 0.02	1.15 ± 0.04	0.87 ± 0.09
	750.5442059	[M-H] <sup>-</sup>	PE(P-16:0/22:4)	2.95 ± 0.03	2.18 ± 0.05	0.01 ± 0.02	0.16 ± 0.00	0.20 ± 0.01	0.17 ± 0.02
	766.5419145	[M-H] <sup>-</sup>	PE(P-18:0/20:4)	8.51 ± 0.26	9.08 ± 0.14	10.11 ± 0.11	5.15 ± 0.16	5.14 ± 0.04	5.25 ± 0.18
	726.5421223	[M-H] <sup>-</sup>	PE(P-16:0/20:2)	3.19 ± 0.04	2.11 ± 0.12	0.02 ± 0.03	0.69 ± 0.00	0.82 ± 0.12	0.72 ± 0.09
	688.4939063	[M-H] <sup>-</sup>	PE(18:1/14:0)	0.68 ± 0.04	0.23 ± 0.03	ND	1.61 ± 0.13	1.98 ± 0.05	1.77 ± 0.11
	700.5245426	[M-H] <sup>-</sup>	PE(O-16:0/18:2)	1.13 ± 0.13	0.85 ± 0.05	0.24 ± 0.00	1.55 ± 0.19	2.03 ± 0.25	1.55 ± 0.07
	728.5447153	[M-H] <sup>-</sup>	PE(P-18:0/18:1)	1.75 ± 0.04	1.36 ± 0.04	0.13 ± 0.00	1.17 ± 0.06	1.16 ± 0.10	1.10 ± 0.15
	742.5298468	[M-H] <sup>-</sup>	PE(18:2/18:0)	53.13 ± 1.00	53.93 ± 0.57	65.83 ± 0.84	39.81 ± 1.24	40.24 ± 0.01	40.06 ± 0.68
	716.5219362	[M-H] <sup>-</sup>	PE(14:1/20:0)	4.25 ± 0.06	4.17 ± 0.03	3.95 ± 0.02	12.57 ± 1.06	13.34 ± 0.31	12.17 ± 0.25
	730.5482562	[M-H] <sup>-</sup>	PE(17:1/18:0)	0.55 ± 0.11	0.54 ± 0.03	0.41 ± 0.58	0.96 ± 0.11	1.10 ± 0.02	1.10 ± 0.02
	742.5257003	[M-H] <sup>-</sup>	PE(17:2/19:0)	4.44 ± 0.28	2.60 ± 0.25	3.02 ± 0.34	0.26 ± 0.02	0.17 ± 0.01	0.00 ± 0.01
	740.5253079	[M-H] <sup>-</sup>	PE(16:0/20:3)	ND	0.06 ± 0.02	0.10 ± 0.01	ND	ND	ND
PG	797.549121	[M-H] <sup>-</sup>	PG(18:2/20:2)	66.39 ± 17.28	81.22 ± 3.63	77.11 ± 10.45	100.00 ± 0.00	100.00 ± 0.00	100.00 ± 0.00
	815.4865084	[M-H] <sup>-</sup>	PG(18:3/22:6)	11.17 ± 1.92	1.82 ± 2.57	11.93 ± 10.77	ND	ND	ND
	783.515169	[M-H] <sup>-</sup>	PG(17:1/20:3)	22.44 ± 19.20	16.96 ± 6.21	10.96 ± 0.32	ND	ND	ND
SM	703.5618296	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:1/16:0)	10.29 ± 0.50	10.35 ± 0.90	10.64 ± 0.07	21.78 ± 0.98	21.09 ± 1.58	20.97 ± 0.22
	731.5955221	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:1/18:0)	11.26 ± 0.04	13.87 ± 0.21	11.61 ± 0.43	1.90 ± 0.02	2.07 ± 0.21	2.02 ± 0.06
	759.6254684	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:1/20:0)	12.83 ± 0.32	13.88 ± 0.21	12.71 ± 0.12	9.82 ± 0.33	11.17 ± 0.42	10.66 ± 0.33
	807.6349014	[M+H] <sup>+</sup>	SM(d18:2/22:0)	0.31 ± 0.01	0.24 ± 0.00	0.21 ± 0.01	0.10 ± 0.00	0.20 ± 0.01	0.19 ± 0.01
	773.6490555	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:1/21:0)	0.87 ± 0.01	0.97 ± 0.00	0.86 ± 0.01	11.99 ± 0.05	13.37 ± 0.12	12.91 ± 0.30
	813.6756568	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:2/24:0)	11.65 ± 0.31	12.97 ± 0.04	10.93 ± 0.14	1.74 ± 0.07	1.81 ± 0.06	1.70 ± 0.03
	787.6454481	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:1/22:0)	27.76 ± 0.07	25.25 ± 0.33	28.21 ± 0.01	25.85 ± 2.39	23.40 ± 0.41	23.63 ± 0.37
	829.7114312	[M+H] <sup>+</sup>	SM(d18:1/25:0)	0.55 ± 0.02	0.52 ± 0.00	0.53 ± 0.01	1.05 ± 0.02	1.04 ± 0.04	1.02 ± 0.00

	801.6766854	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:1/23:0)	3.61 ± 0.03	3.62 ± 0.07	3.58 ± 0.14	14.97 ± 0.56	15.30 ± 0.97	15.92 ± 0.05
	815.6778679	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	SM(d18:1/24:0)	20.87 ± 0.36	18.32 ± 0.05	20.71 ± 0.31	10.80 ± 0.51	10.56 ± 0.61	10.98 ± 0.14
PC	678.5038049	[M+H] <sup>+</sup>	PC(10:0/18:0)	0.09 ± 0.01	0.14 ± 0.03	0.07 ± 0.01	3.05 ± 0.15	3.43 ± 0.53	3.72 ± 0.26
	706.5217218	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	PC(14:0/16:0)	1.87 ± 0.09	2.24 ± 0.07	1.73 ± 0.07	17.57 ± 0.07	19.19 ± 0.55	18.42 ± 0.13
	758.5475821	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	PC(16:0/18:2)	60.41 ± 0.37	60.69 ± 2.59	62.14 ± 0.25	43.32 ± 0.15	40.07 ± 0.17	41.56 ± 0.02
	720.5568391	[M+H] <sup>+</sup>	PC(16:0/15:0)	0.84 ± 0.04	0.80 ± 0.06	0.89 ± 0.02	3.74 ± 0.18	4.39 ± 0.16	4.21 ± 0.04
	734.5505858	[M+H] <sup>+</sup> , [M+Na] <sup>+</sup>	PC(16:0/16:0)	16.74 ± 0.12	18.82 ± 0.73	17.37 ± 0.57	19.65 ± 0.01	21.56 ± 0.65	20.17 ± 0.20
	748.5880855	[M+H] <sup>+</sup>	PC(17:0/16:0)	0.75 ± 0.02	0.76 ± 0.03	0.73 ± 0.00	1.92 ± 0.10	2.38 ± 0.15	2.20 ± 0.05
	806.5662466	[M+H] <sup>+</sup>	PC(18:3/18:0)	1.05 ± 0.07	0.94 ± 0.16	0.95 ± 0.02	0.95 ± 0.23	0.48 ± 0.03	0.62 ± 0.01
	774.6021147	[M+H] <sup>+</sup>	PC(16:0/19:1)	0.35 ± 0.02	0.16 ± 0.08	0.07 ± 0.00	0.46 ± 0.06	0.78 ± 0.04	0.68 ± 0.21
	782.5615541	[M+H] <sup>+</sup>	PC(16:0/18:1)	6.05 ± 0.27	5.67 ± 0.67	6.19 ± 0.43	5.64 ± 0.04	4.94 ± 0.02	5.31 ± 0.04
	808.5773401	[M+H] <sup>+</sup>	PC(18:1/18:1)	11.85 ± 0.02	9.79 ± 0.96	9.88 ± 0.29	3.69 ± 0.07	2.78 ± 0.00	3.10 ± 0.09

The values are represented as the means ± SD.