

Electronic supplementary information (ESI)

Fatty acids and *sn*-2 position distribution in breast milk and association with edible oils in maternal diet: a study of five regions in China

Fangmin Wang ^{a,b}, Jiahui Yu ^{a,b}, Li Wang ^c, Shuai Wang ^c, Qingzhe Jin ^{a,b}, Qingyun Wang ^{c,*}, Wei Wei ^{a,b,*}, and Xingguo Wang ^{a,b}

a. State Key Laboratory of Food Science and Technology, Jiangnan University, Wuxi, China

b. Collaborative Innovation Center of Food Safety and Quality Control in Jiangsu Province, School of Food Science and Technology, Jiangnan University, Wuxi, China

c. Beidahuang Wondersun Dairy Company Limited, Harbin, China

* Corresponding author

Tel.: +86 510 85329050. *Email address:* weiw@jiangnan.edu.cn (W. Wei). Tel.: +86 451

85986030. *Email address:* qywang2006@126.com (Q. Wang).

Table S1. Fatty acids composition of the triacylglycerol (TAG) and the 2-monoglycerol (2-MAG) of different oil samples

	Soybean oil		Corn oil		Sunflower oil		Peanut oil		Rapeseed oil		Olive oil	
	Total	<i>sn</i> -2 position	Total	<i>sn</i> -2 position	Total	<i>sn</i> -2 position	Total	<i>sn</i> -2 position	Total	<i>sn</i> -2 position	Total	<i>sn</i> -2 position
14:0	0.09	-	-	-	-	-	-	-	-	-	-	-
16:0	10.74	3.56	12.30	4.20	12.30	4.58	10.78	6.47	4.16	1.81	10.79	4.83
17:0	0.12	-	0.09	-	0.09	-	0.10	-	0.12	-	0.07	-
18:0	4.49	1.92	2.00	0.99	2.00	2.40	3.41	5.61	1.74	0.88	3.30	1.07
20:0	0.33	-	0.49	-	0.49	-	1.03	0.53	0.50	-	0.46	-
22:0	0.42	-	0.16	-	0.16	-	1.58	-	0.34	-	0.12	-
24:0	0.16	-	0.20	-	0.20	-	1.33	-	0.18	-	0.06	-
16:1 n-7	0.10	-	0.10	-	0.10	-	0.09	-	0.25	-	0.80	-
17:1 n-7	0.06	-	0.05	-	0.05	-	0.06	-	-	-	0.10	-
18:1 n-9	22.98	22.45	31.28	29.63	31.28	22.81	45.67	40.05	61.84	52.80	78.37	80.93
20:1 n-9	0.40	-	0.44	1.17	0.44	0.35	1.44	0.43	0.62	1.10	0.41	1.51
18:2 n-6	52.68	65.38	51.81	61.81	51.81	69.60	33.24	46.12	20.11	31.38	4.51	11.66
18:3 n-6	0.17	-	0.24	1.11	0.24	0.26	1.07	-	1.24	-	0.24	-
18:3 n-3	6.70	6.68	0.66	1.09	0.66	-	0.14	-	7.68	12.03	0.64	-
SFAs	16.35	5.48	15.24	5.19	15.24	6.98	18.23	3.92	7.04	2.69	14.8	5.90
MUFAs	23.54	22.45	31.87	30.8	31.87	22.96	47.26	43.32	62.71	53.90	79.68	82.44
PUFAs	59.55	72.06	52.71	64.01	52.71	70.06	34.45	52.76	29.03	43.41	5.39	11.66

Data in the table were from the our previous study.²³

Table S2. Composition of total fatty acids (%) in breast milk in five regions of China

Fatty acids	Lactational Stage	Total samples	Chengdu §	Nanning §	Tianjin §	Wuhan §	Xi'an §	S ¶	R ¶	S × R ¶
8:0	Colostrum	0.08 ± 0.14 ^c	0.06 ± 0.04 ^{cY}	0.04 ± 0.04 ^{cY}	0.18 ± 0.28 ^{aX}	0.04 ± 0.02 ^{cY}	0.06 ± 0.05 ^{bY}	***	***	**
	Transitional	0.11 ± 0.05 ^b	0.09 ± 0.03 ^{bY}	0.09 ± 0.04 ^{bY}	0.12 ± 0.04 ^{aXY}	0.13 ± 0.06 ^{bX}	0.14 ± 0.06 ^{aX}			
	Mature	0.14 ± 0.06 ^a	0.12 ± 0.03 ^{aY}	0.12 ± 0.04 ^{aY}	0.16 ± 0.04 ^{aX}	0.17 ± 0.08 ^{aX}	0.14 ± 0.06 ^{aXY}			
13:0	Colostrum	0.02 ± 0.01 ^a	0.03 ± 0.03 ^{aX}	0.02 ± 0.01 ^{aY}	0.01 ± 0.01 ^{aY}	0.01 ± 0.00 ^{bY}	0.02 ± 0.01 ^{aY}	NS	NS	**
	Transitional	0.02 ± 0.01 ^a	0.02 ± 0.01 ^{aX}	0.02 ± 0.01 ^{aX}	0.02 ± 0.01 ^{aX}	0.02 ± 0.01 ^{aX}	0.02 ± 0.01 ^{aX}			
	Mature	0.02 ± 0.01 ^a	0.02 ± 0.00 ^{aX}	0.02 ± 0.01 ^{aX}	0.02 ± 0.01 ^{aX}	0.02 ± 0.01 ^{aX}	0.02 ± 0.01 ^{aX}			
20:0	Colostrum	0.12 ± 0.07 ^a	0.15 ± 0.05 ^{aX}	0.15 ± 0.03 ^{bX}	0.14 ± 0.12 ^{aXY}	0.07 ± 0.03 ^{aZ}	0.11 ± 0.03 ^{aYZ}	*	***	**
	Transitional	0.11 ± 0.06 ^a	0.15 ± 0.07 ^{aX}	0.16 ± 0.03 ^{abX}	0.09 ± 0.02 ^{bY}	0.02 ± 0.04 ^{bZ}	0.11 ± 0.01 ^{aY}			
	Mature	0.11 ± 0.07 ^a	0.19 ± 0.04 ^{aX}	0.17 ± 0.03 ^{aX}	0.10 ± 0.03 ^{abY}	0.02 ± 0.02 ^{bZ}	0.10 ± 0.02 ^{aY}			
22:0	Colostrum	0.02 ± 0.02 ^a	0.03 ± 0.01 ^{aX}	0.04 ± 0.02 ^{bX}	0.01 ± 0.01 ^{aY}	0.01 ± 0.01 ^{aY}	0.03 ± 0.01 ^{bX}	**	***	*
	Transitional	0.03 ± 0.03 ^a	0.03 ± 0.01 ^{aY}	0.04 ± 0.02 ^{bY}	0.02 ± 0.03 ^{aYZ}	0.01 ± 0.01 ^{aZ}	0.05 ± 0.04 ^{aX}			
	Mature	0.03 ± 0.03 ^a	0.04 ± 0.02 ^{aY}	0.06 ± 0.04 ^{aX}	0.02 ± 0.02 ^{aZ}	0.01 ± 0.01 ^{aZ}	0.05 ± 0.04 ^{abXY}			
24:0	Colostrum	0.17 ± 0.08 ^a	0.16 ± 0.08 ^{aY}	0.17 ± 0.06 ^{aY}	0.22 ± 0.12 ^{aX}	0.14 ± 0.05 ^{aY}	0.13 ± 0.05 ^{aY}	***	***	**
	Transitional	0.10 ± 0.05 ^b	0.10 ± 0.05 ^{bX}	0.13 ± 0.06 ^{bX}	0.11 ± 0.06 ^{bX}	0.05 ± 0.02 ^{bY}	0.10 ± 0.04 ^{bX}			
	Mature	0.09 ± 0.05 ^b	0.09 ± 0.05 ^{bY}	0.13 ± 0.06 ^{bX}	0.09 ± 0.03 ^{bY}	0.04 ± 0.02 ^{bZ}	0.09 ± 0.04 ^{bY}			
14:1	Colostrum	0.04 ± 0.03 ^a	0.05 ± 0.03 ^{aX}	0.05 ± 0.03 ^{aX}	0.02 ± 0.01 ^{bY}	0.02 ± 0.01 ^{bY}	0.05 ± 0.02 ^{aX}	**	***	NS
	Transitional	0.05 ± 0.04 ^a	0.05 ± 0.03 ^{aX}	0.07 ± 0.06 ^{aX}	0.03 ± 0.02 ^{bY}	0.05 ± 0.04 ^{aXY}	0.05 ± 0.02 ^{aXY}			

	1									
16:1 n-7	Mature	0.05 ± 0.03 ^a	0.05 ± 0.03 ^{aXY}	0.07 ± 0.05 ^{aX}	0.04 ± 0.02 ^{aY}	0.04 ± 0.02 ^{abY}	0.06 ± 0.02 ^{aXY}			
	Colostrum	1.93 ± 0.45 ^b	2.16 ± 0.40 ^{aX}	2.01 ± 0.45 ^{bXY}	1.62 ± 0.36 ^{bZ}	1.86 ± 0.32 ^{bYZ}	2.04 ± 0.52 ^{aXY}	***	***	NS
	Transitiona	2.13 ± 0.54 ^a	2.35 ± 0.71 ^{aX}	2.22 ± 0.53 ^{abX}	1.82 ± 0.44 ^{abY}	2.19 ± 0.36 ^{aX}	2.09 ± 0.56 ^{aXY}			
	1									
17:1 n-7	Mature	2.25 ± 0.59 ^a	2.19 ± 0.68 ^{aXY}	2.34 ± 0.53 ^{aXY}	2.00 ± 0.50 ^{aY}	2.42 ± 0.70 ^{aX}	2.26 ± 0.48 ^{aXY}			
	Colostrum	0.12 ± 0.05 ^a	0.12 ± 0.04 ^{aX}	0.11 ± 0.02 ^{bX}	0.13 ± 0.09 ^{aX}	0.11 ± 0.02 ^{aX}	0.11 ± 0.04 ^{aX}	NS	NS	NS
	Transitiona	0.12 ± 0.03 ^a	0.12 ± 0.04 ^{aXY}	0.13 ± 0.03 ^{abX}	0.10 ± 0.02 ^{aY}	0.12 ± 0.03 ^{aXY}	0.11 ± 0.03 ^{aXY}			
	1									
18:1 n-9 ^t	Mature	0.12 ± 0.03 ^a	0.13 ± 0.03 ^{aXY}	0.14 ± 0.04 ^{aX}	0.12 ± 0.03 ^{aXYZ}	0.11 ± 0.02 ^{aYZ}	0.10 ± 0.02 ^{aZ}			
	Colostrum	0.04 ± 0.03 ^a	0.04 ± 0.03 ^{bY}	0.06 ± 0.03 ^{bX}	0.01 ± 0.02 ^{aZ}	0.02 ± 0.02 ^{aZ}	0.04 ± 0.03 ^{aXY}	**	***	**
	Transitiona	0.04 ± 0.03 ^a	0.04 ± 0.02 ^{bY}	0.07 ± 0.03 ^{bX}	0.02 ± 0.01 ^{aZ}	0.02 ± 0.02 ^{aZ}	0.04 ± 0.03 ^{aY}			
	1									
20:1 n-9	Mature	0.05 ± 0.05 ^a	0.07 ± 0.03 ^{aY}	0.10 ± 0.08 ^{aX}	0.02 ± 0.01 ^{aZ}	0.03 ± 0.02 ^{aZ}	0.03 ± 0.03 ^{aZ}			
	Colostrum	0.69 ± 0.28 ^a	0.70 ± 0.24 ^{aY}	0.61 ± 0.16 ^{aYZ}	0.87 ± 0.26 ^{aX}	0.75 ± 0.35 ^{aXY}	0.48 ± 0.22 ^{aZ}	***	***	NS
	Transitiona	0.48 ± 0.26 ^b	0.52 ± 0.19 ^{aX}	0.55 ± 0.29 ^{aX}	0.54 ± 0.21 ^{bX}	0.46 ± 0.38 ^{bXY}	0.33 ± 0.10 ^{bY}			
	1									
18:2 n-6 ^t	Mature	0.49 ± 0.36 ^b	0.63 ± 0.44 ^{aX}	0.51 ± 0.30 ^{aXY}	0.43 ± 0.20 ^{bXY}	0.57 ± 0.53 ^{abX}	0.29 ± 0.07 ^{bZ}			
	Colostrum	0.05 ± 0.03 ^a	0.05 ± 0.04 ^{aXYZ}	0.06 ± 0.02 ^{aXY}	0.04 ± 0.02 ^{aYZ}	0.03 ± 0.02 ^{aZ}	0.06 ± 0.03 ^{aX}	NS	***	NS
	Transitiona	0.05 ± 0.04 ^a	0.06 ± 0.03 ^{aXY}	0.06 ± 0.02 ^{aY}	0.03 ± 0.02 ^{bZ}	0.02 ± 0.02 ^{abZ}	0.08 ± 0.05 ^{aX}			
	1									
18:3 n-6	Mature	0.05 ± 0.03 ^a	0.06 ± 0.03 ^{aX}	0.06 ± 0.03 ^{aX}	0.03 ± 0.02 ^{abY}	0.02 ± 0.01 ^{bY}	0.08 ± 0.04 ^{aX}			
	Colostrum	0.06 ± 0.04 ^c	0.08 ± 0.04 ^{bX}	0.06 ± 0.04 ^{cXY}	0.04 ± 0.04 ^{bZ}	0.04 ± 0.02 ^{bYZ}	0.07 ± 0.04 ^{bX}	***	***	NS
	Transitiona	0.09 ± 0.04 ^b	0.09 ± 0.05 ^{bX}	0.10 ± 0.05 ^{bX}	0.08 ± 0.03 ^{aXY}	0.06 ± 0.04 ^{abY}	0.10 ± 0.03 ^{abX}			
	1									
	Mature	0.11 ± 0.05 ^a	0.14 ± 0.04 ^{aX}	0.14 ± 0.06 ^{aX}	0.09 ± 0.03 ^{aY}	0.06 ± 0.03 ^{aZ}	0.12 ± 0.06 ^{aXY}			

18:3 n-3t	Colostrum	0.06 ± 0.03 ^a	0.07 ± 0.03 ^{aX}	0.06 ± 0.03 ^{aXY}	0.04 ± 0.02 ^{aZ}	0.05 ± 0.03 ^{aYZ}	0.07 ± 0.03 ^{aX}	NS	***	NS
	Transitiona l	0.05 ± 0.04 ^a	0.06 ± 0.03 ^{aXY}	0.08 ± 0.04 ^{aX}	0.04 ± 0.03 ^{aYZ}	0.03 ± 0.02 ^{bZ}	0.07 ± 0.04 ^{aX}			
	Mature	0.06 ± 0.04 ^a	0.07 ± 0.05 ^{aXY}	0.08 ± 0.04 ^{aX}	0.05 ± 0.05 ^{aYZ}	0.03 ± 0.03 ^{abZ}	0.06 ± 0.03 ^{aXYZ}			
20:2 n-6	Colostrum	1.17 ± 0.38 ^a	1.05 ± 0.37 ^{aZ}	1.16 ± 0.34 ^{aXY}	1.39 ± 0.36 ^{aX}	1.19 ± 0.38 ^{aXY}	1.00 ± 0.37 ^{aZ}	***	***	**
	Transitiona l	0.66 ± 0.25 ^b	0.66 ± 0.19 ^{bX}	0.76 ± 0.23 ^{bX}	0.74 ± 0.26 ^{bX}	0.49 ± 0.16 ^{bY}	0.63 ± 0.33 ^{bXY}			
	Mature	0.51 ± 0.15 ^c	0.53 ± 0.10 ^{bX}	0.59 ± 0.19 ^{cX}	0.51 ± 0.08 ^{cX}	0.37 ± 0.12 ^{bY}	0.56 ± 0.15 ^{bX}			
20:3 n-6	Colostrum	0.57 ± 0.16 ^a	0.59 ± 0.19 ^{aXY}	0.66 ± 0.16 ^{aX}	0.61 ± 0.17 ^{aXY}	0.46 ± 0.12 ^{aZ}	0.52 ± 0.09 ^{aYZ}	***	***	*
	Transitiona l	0.43 ± 0.18 ^b	0.52 ± 0.15 ^{aX}	0.56 ± 0.15 ^{abX}	0.43 ± 0.13 ^{bY}	0.22 ± 0.09 ^{bZ}	0.42 ± 0.14 ^{bY}			
	Mature	0.40 ± 0.18 ^b	0.50 ± 0.13 ^{aX}	0.52 ± 0.18 ^{bX}	0.37 ± 0.11 ^{bY}	0.19 ± 0.05 ^{bZ}	0.43 ± 0.16 ^{bY}			
20:3 n-3	Colostrum	0.09 ± 0.09 ^a	0.16 ± 0.15 ^{aX}	0.12 ± 0.03 ^{aX}	0.05 ± 0.03 ^{aY}	0.02 ± 0.05 ^{aY}	0.13 ± 0.06 ^{aX}	***	***	NS
	Transitiona l	0.06 ± 0.05 ^b	0.08 ± 0.05 ^{bX}	0.10 ± 0.03 ^{bX}	0.03 ± 0.02 ^{bY}	0.01 ± 0.03 ^{aY}	0.09 ± 0.06 ^{bX}			
	Mature	0.05 ± 0.04 ^b	0.07 ± 0.02 ^{bX}	0.08 ± 0.02 ^{bX}	0.01 ± 0.01 ^{cY}	0.01 ± 0.04 ^{aY}	0.07 ± 0.03 ^{bX}			
20:5 n-3	Colostrum	0.04 ± 0.08 ^a	0.05 ± 0.02 ^{aXY}	0.06 ± 0.02 ^{aX}	0.04 ± 0.17 ^{aXY}	0.00 ± 0.01 ^{aY}	0.03 ± 0.01 ^{aXY}	NS	***	NS
	Transitiona l	0.03 ± 0.03 ^a	0.06 ± 0.04 ^{aX}	0.06 ± 0.03 ^{aX}	0.00 ± 0.01 ^{aZ}	0.01 ± 0.01 ^{aZ}	0.03 ± 0.01 ^{aY}			
	Mature	0.03 ± 0.03 ^a	0.07 ± 0.03 ^{aX}	0.05 ± 0.01 ^{aY}	0.01 ± 0.01 ^{aZ}	0.00 ± 0.01 ^{aZ}	0.03 ± 0.01 ^{aY}			
22:2 n-6	Colostrum	0.17 ± 0.07 ^a	0.18 ± 0.08 ^{aXY}	0.21 ± 0.06 ^{aX}	0.17 ± 0.06 ^{aXY}	0.15 ± 0.06 ^{aY}	0.16 ± 0.08 ^{aY}	***	***	NS
	Transitiona l	0.09 ± 0.06 ^b	0.11 ± 0.05 ^{bXY}	0.13 ± 0.05 ^{bX}	0.08 ± 0.04 ^{bYZ}	0.06 ± 0.05 ^{bZ}	0.09 ± 0.06 ^{bYZ}			
	Mature	0.07 ± 0.03 ^c	0.08 ± 0.02 ^{bX}	0.09 ± 0.04 ^{cX}	0.06 ± 0.01 ^{bY}	0.03 ± 0.03 ^{bZ}	0.07 ± 0.03 ^{bY}			
22:5 n-3	Colostrum	0.11 ± 0.06 ^a	0.13 ± 0.06 ^{aX}	0.13 ± 0.05 ^{aX}	0.11 ± 0.07 ^{aXY}	0.07 ± 0.02 ^{aZ}	0.08 ± 0.03 ^{aYZ}	***	***	NS
	Transitiona	0.08 ± 0.05 ^b	0.11 ± 0.04 ^{aX}	0.11 ± 0.04 ^{bX}	0.06 ± 0.03 ^{bY}	0.03 ± 0.03 ^{bZ}	0.08 ± 0.03 ^{aY}			

1						
Mature	0.07 ± 0.04^b	0.10 ± 0.04^{aX}	0.10 ± 0.03^{bX}	0.06 ± 0.02^{bY}	0.02 ± 0.02^{cZ}	0.07 ± 0.02^{aY}

Fatty acids in Table S2 are present in breast milk but not discussed in the manuscript. Values are represented as mean \pm SD. The data was presented as a percentage of the total FAs. The number of mothers in Chengdu, Nanning, Tianjin, Wuhan, and Xi'an were 18, 22, 20, 21 and 19, respectively, for a total of 100. The number of breast milk samples was 54, 66, 60, 63 and 57, respectively, for a total of 300. [§] Different superscript uppercase letters indicate significant differences ($P < 0.05$) with a row; different superscript lowercase letters indicate significant difference ($P < 0.05$) with a column. [¶] R, P values for the region; S, P values for lactational stage; R \times S, P values for the region by lactational stage. NS, $P > 0.05$, *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

Table S3. Composition of *sn*-2 fatty acids (%) in breast milk in five regions in China

Fatty acids	Lactational Stage	Total samples	Chengdu §	Nanning §	Tianjin §	Wuhan §	Xi'an §	S ¶	R ¶	S × R ¶
13:0	Colostrum	0.04 ± 0.07 ^a	0.04 ± 0.01 ^{aX}	0.04 ± 0.02 ^{aX}	0.04 ± 0.02 ^{aX}	0.05 ± 0.15 ^{aX}	0.03 ± 0.01 ^{bX}	NS	NS	NS
	Transitional	0.04 ± 0.02 ^a	0.04 ± 0.01 ^{aY}	0.04 ± 0.02 ^{aY}	0.04 ± 0.02 ^{aY}	0.03 ± 0.01 ^{aY}	0.06 ± 0.03 ^{aX}			
	Mature	0.03 ± 0.02 ^a	0.05 ± 0.02 ^{aX}	0.03 ± 0.02 ^{aYZ}	0.03 ± 0.01 ^{aZ}	0.03 ± 0.01 ^{aYZ}	0.04 ± 0.01 ^{bY}			
20:0	Colostrum	0.10 ± 0.07 ^b	0.13 ± 0.05 ^{bX}	0.10 ± 0.04 ^{cY}	0.11 ± 0.10 ^{aXY}	0.03 ± 0.04 ^{aZ}	0.14 ± 0.05 ^{aX}	***	***	***
	Transitional	0.13 ± 0.08 ^a	0.16 ± 0.09 ^{bXY}	0.15 ± 0.04 ^{bXY}	0.11 ± 0.04 ^{aY}	0.04 ± 0.03 ^{aZ}	0.18 ± 0.11 ^{aX}			
	Mature	0.14 ± 0.11 ^a	0.24 ± 0.07 ^{aX}	0.22 ± 0.16 ^{aX}	0.12 ± 0.04 ^{aY}	0.04 ± 0.02 ^{aZ}	0.08 ± 0.02 ^{bYZ}			
22:0	Colostrum	0.04 ± 0.10 ^b	0.02 ± 0.01 ^{bZ}	0.01 ± 0.01 ^{bZ}	0.09 ± 0.19 ^{bX}	0.05 ± 0.06 ^{aXY}	0.03 ± 0.02 ^{aXY}	***	***	***
	Transitional	0.02 ± 0.03 ^b	0.02 ± 0.02 ^{bY}	0.01 ± 0.02 ^{bY}	0.05 ± 0.04 ^{bX}	0.01 ± 0.01 ^{bY}	0.02 ± 0.02 ^{bY}			
	Mature	0.12 ± 0.27 ^a	0.05 ± 0.05 ^{aY}	0.05 ± 0.04 ^{aY}	0.10 ± 0.46 ^{aX}	0.02 ± 0.01 ^{bY}	0.02 ± 0.02 ^{bY}			
24:0	Colostrum	0.20 ± 0.14 ^a	0.27 ± 0.08 ^{aX}	0.05 ± 0.03 ^{bZ}	0.30 ± 0.17 ^{aX}	0.14 ± 0.07 ^{aY}	0.23 ± 0.11 ^{aX}	***	***	***
	Transitional	0.13 ± 0.11 ^b	0.09 ± 0.11 ^{cX}	0.16 ± 0.15 ^{aX}	0.15 ± 0.11 ^{bX}	0.11 ± 0.05 ^{aX}	0.11 ± 0.10 ^{bX}			
	Mature	0.13 ± 0.09 ^b	0.19 ± 0.10 ^{bX}	0.12 ± 0.12 ^{abY}	0.17 ± 0.07 ^{bXY}	0.13 ± 0.05 ^{aY}	0.06 ± 0.03 ^{bZ}			
16:1 n-7	Colostrum	2.51 ± 0.68 ^b	2.56 ± 0.51 ^{bY}	1.91 ± 0.53 ^{bZ}	2.57 ± 0.61 ^{aY}	2.99 ± 0.61 ^{bX}	2.57 ± 0.68 ^{aY}	***	***	*
	Transitional	2.79 ± 0.72 ^a	2.65 ± 0.82 ^{bX}	2.71 ± 0.64 ^{aX}	2.77 ± 0.55 ^{aX}	3.02 ± 0.69 ^{bX}	2.78 ± 0.91 ^{aX}			
	Mature	2.99 ± 0.87 ^a	3.26 ± 0.92 ^{aX}	2.63 ± 0.49 ^{aY}	2.73 ± 0.61 ^{aY}	3.61 ± 1.07 ^{aX}	2.74 ± 0.77 ^{aY}			
17:1 n-7	Colostrum	0.14 ± 0.06 ^a	0.15 ± 0.03 ^{aXY}	0.11 ± 0.04 ^{bZ}	0.14 ± 0.09 ^{aXYZ}	0.13 ± 0.04 ^{aYZ}	0.17 ± 0.05 ^{aX}	NS	*	NS
	Transitional	0.14 ± 0.04 ^a	0.14 ± 0.06 ^{aXY}	0.14 ± 0.04 ^{aXY}	0.14 ± 0.03 ^{aXY}	0.13 ± 0.02 ^{aY}	0.16 ± 0.05 ^{aX}			
	Mature	0.15 ± 0.06 ^a	0.16 ± 0.04 ^{aX}	0.16 ± 0.11 ^{aX}	0.13 ± 0.04 ^{aX}	0.14 ± 0.02 ^{aX}	0.14 ± 0.04 ^{aX}			
18:1 n-9 _t	Colostrum	0.03 ± 0.02 ^a	0.04 ± 0.02 ^{aXY}	0.03 ± 0.02 ^{bYZ}	0.03 ± 0.02 ^{aYZ}	0.02 ± 0.02 ^{aZ}	0.05 ± 0.02 ^{aX}	NS	***	***
	Transitional	0.03 ± 0.03 ^a	0.04 ± 0.02 ^{aY}	0.03 ± 0.02 ^{bYZ}	0.02 ± 0.03 ^{aZ}	0.02 ± 0.02 ^{aZ}	0.06 ± 0.04 ^{aX}			
	Mature	0.04 ± 0.07 ^a	0.03 ± 0.04 ^{aY}	0.09 ± 0.12 ^{aX}	0.02 ± 0.02 ^{aY}	0.02 ± 0.02 ^{aY}	0.01 ± 0.01 ^{bY}			
20:1 n-9	Colostrum	0.35 ± 0.15 ^a	0.42 ± 0.10 ^{bX}	0.29 ± 0.07 ^{bYZ}	0.47 ± 0.19 ^{aX}	0.25 ± 0.14 ^{bZ}	0.35 ± 0.13 ^{aXY}	NS	***	***

	Transitional	0.32 ± 0.14 ^a	0.29 ± 0.13 ^{cX}	0.37 ± 0.12 ^{aX}	0.35 ± 0.16 ^{bX}	0.29 ± 0.16 ^{abX}	0.32 ± 0.13 ^{aX}			
	Mature	0.35 ± 0.21 ^a	0.56 ± 0.21 ^{aX}	0.29 ± 0.15 ^{bY}	0.36 ± 0.16 ^{abY}	0.38 ± 0.24 ^{aY}	0.16 ± 0.05 ^{bZ}			
18:2 n-6t	Colostrum	0.04 ± 0.03 ^a	0.04 ± 0.02 ^{bY}	0.02 ± 0.01 ^{bZ}	0.04 ± 0.02 ^{aY}	0.02 ± 0.03 ^{aZ}	0.07 ± 0.03 ^{aX}	NS	NS	NS
	Transitional	0.04 ± 0.03 ^a	0.03 ± 0.02 ^{bY}	0.03 ± 0.02 ^{bY}	0.04 ± 0.02 ^{aY}	0.02 ± 0.01 ^{aY}	0.07 ± 0.05 ^{aX}			
	Mature	0.07 ± 0.04 ^a	0.07 ± 0.03 ^{aX}	0.11 ± 0.12 ^{aX}	0.04 ± 0.02 ^{aX}	0.03 ± 0.02 ^{aX}	0.12 ± 3.44 ^{aX}			
18:3 n-6	Colostrum	0.04 ± 0.03 ^a	0.06 ± 0.02 ^{bX}	0.02 ± 0.01 ^{bY}	0.03 ± 0.02 ^{cY}	0.02 ± 0.02 ^{bY}	0.06 ± 0.03 ^{aX}	***	***	***
	Transitional	0.05 ± 0.03 ^a	0.05 ± 0.04 ^{bX}	0.05 ± 0.02 ^{bX}	0.05 ± 0.02 ^{bX}	0.05 ± 0.02 ^{aX}	0.06 ± 0.03 ^{aX}			
	Mature	0.08 ± 0.06 ^a	0.11 ± 0.03 ^{aX}	0.10 ± 0.11 ^{aX}	0.06 ± 0.01 ^{aY}	0.05 ± 0.02 ^{aY}	0.06 ± 0.03 ^{aY}			
18:3 n-3t	Colostrum	0.06 ± 0.05 ^a	0.05 ± 0.01 ^{bX}	0.06 ± 0.02 ^{bX}	0.05 ± 0.10 ^{aX}	0.06 ± 0.02 ^{aX}	0.06 ± 0.02 ^{aX}	*	**	*
	Transitional	0.05 ± 0.03 ^a	0.04 ± 0.02 ^{bYZ}	0.05 ± 0.02 ^{bY}	0.03 ± 0.02 ^{aZ}	0.04 ± 0.02 ^{aYZ}	0.08 ± 0.05 ^{aX}			
	Mature	0.07 ± 0.10 ^a	0.10 ± 0.05 ^{aXY}	0.11 ± 0.06 ^{aX}	0.04 ± 0.03 ^{aY}	0.02 ± 0.02 ^{bY}	0.09 ± 0.21 ^{aXY}			
20:2 n-6	Colostrum	0.40 ± 0.20 ^a	0.50 ± 0.14 ^{aXY}	0.26 ± 0.08 ^{abZ}	0.58 ± 0.20 ^{aX}	0.23 ± 0.12 ^{aZ}	0.47 ± 0.13 ^{aY}	***	***	***
	Transitional	0.28 ± 0.11 ^b	0.25 ± 0.13 ^{bY}	0.29 ± 0.10 ^{aY}	0.37 ± 0.11 ^{bX}	0.23 ± 0.06 ^{aY}	0.26 ± 0.11 ^{bY}			
	Mature	0.23 ± 0.10 ^c	0.32 ± 0.08 ^{bX}	0.22 ± 0.13 ^{bY}	0.26 ± 0.06 ^{cY}	0.20 ± 0.05 ^{aY}	0.13 ± 0.03 ^{cZ}			
20:3 n-6	Colostrum	0.22 ± 0.13 ^a	0.30 ± 0.10 ^{aX}	0.16 ± 0.06 ^{bY}	0.31 ± 0.15 ^{aX}	0.09 ± 0.05 ^{bZ}	0.26 ± 0.07 ^{aX}	**	***	***
	Transitional	0.18 ± 0.08 ^b	0.16 ± 0.09 ^{bXY}	0.20 ± 0.08 ^{abX}	0.21 ± 0.08 ^{bX}	0.12 ± 0.04 ^{aY}	0.18 ± 0.07 ^{bX}			
	Mature	0.21 ± 0.17 ^{ab}	0.31 ± 0.10 ^{aX}	0.29 ± 0.28 ^{aX}	0.19 ± 0.06 ^{bY}	0.13 ± 0.04 ^{aY}	0.13 ± 0.13 ^{bY}			
20:3 n-3	Colostrum	0.01 ± 0.01 ^a	0.02 ± 0.02 ^{aX}	0.01 ± 0.02 ^{aY}	0.01 ± 0.01 ^{aXY}	0.00 ± 0.01 ^{aY}	0.01 ± 0.01 ^{aXY}	NS	***	**
	Transitional	0.01 ± 0.01 ^a	0.01 ± 0.01 ^{aX}	0.01 ± 0.01 ^{aX}	0.00 ± 0.01 ^{aY}	0.00 ± 0.00 ^{aY}	0.01 ± 0.02 ^{aX}			
	Mature	0.01 ± 0.02 ^a	0.02 ± 0.01 ^{aX}	0.02 ± 0.04 ^{aX}	0.00 ± 0.00 ^{aY}	0.00 ± 0.00 ^{aY}	0.00 ± 0.01 ^{aY}			
20:5 n-3	Colostrum	0.08 ± 0.10 ^b	0.05 ± 0.06 ^{cZ}	0.21 ± 0.10 ^{abX}	0.02 ± 0.03 ^{bZ}	0.01 ± 0.02 ^{aZ}	0.11 ± 0.09 ^{bY}	***	***	***
	Transitional	0.11 ± 0.13 ^b	0.14 ± 0.11 ^{bY}	0.16 ± 0.15 ^{bY}	0.02 ± 0.03 ^{bZ}	0.02 ± 0.03 ^{aZ}	0.22 ± 0.13 ^{aX}			
	Mature	0.59 ± 1.33 ^a	0.34 ± 0.12 ^{aX}	0.25 ± 0.14 ^{aY}	0.07 ± 0.04 ^{aY}	0.02 ± 0.04 ^{aZ}	0.09 ± 0.05 ^{bZ}			
22:2 n-6	Colostrum	0.18 ± 0.12 ^a	0.25 ± 0.07 ^{aX}	0.07 ± 0.03 ^{aY}	0.27 ± 0.15 ^{aX}	0.10 ± 0.07 ^{aY}	0.25 ± 0.08 ^{aX}	***	***	***
	Transitional	0.12 ± 0.09 ^b	0.09 ± 0.09 ^{cY}	0.12 ± 0.07 ^{aY}	0.19 ± 0.12 ^{bX}	0.08 ± 0.03 ^{aY}	0.10 ± 0.09 ^{bY}			
	Mature	0.10 ± 0.10 ^b	0.16 ± 0.08 ^{bX}	0.13 ± 0.18 ^{aX}	0.11 ± 0.05 ^{cXY}	0.07 ± 0.04 ^{aYZ}	0.03 ± 0.02 ^{cZ}			

22:5 n-3	Colostrum	0.08 ± 0.07 ^a	0.16 ± 0.04 ^{bX}	0.06 ± 0.04 ^{aYZ}	0.06 ± 0.05 ^{aYZ}	0.02 ± 0.04 ^{aZ}	0.12 ± 0.04 ^{aY}	NS	***	***
	Transitional	0.08 ± 0.06 ^a	0.12 ± 0.05 ^{bX}	0.11 ± 0.06 ^{aX}	0.06 ± 0.05 ^{aY}	0.03 ± 0.02 ^{aY}	0.10 ± 0.06 ^{aX}			
	Mature	0.09 ± 0.10 ^a	0.26 ± 0.10 ^{aX}	0.10 ± 0.09 ^{aY}	0.06 ± 0.03 ^{aZ}	0.04 ± 0.02 ^{aZ}	0.03 ± 0.02 ^{bZ}			

Sn-2 fatty acids in Table S3 are present in breast milk but not discussed in the manuscript. Values are represented as mean ± SD. The data was presented as a percentage of the total *sn*-2 FAs. The number of mothers in Chengdu, Nanning, Tianjin, Wuhan, and Xi'an were 18, 22, 20, 21 and 19, respectively, for a total of 100. The number of breast milk samples was 54, 66, 60, 63 and 57, respectively, for a total of 300. § Different superscript uppercase letters indicate significant differences ($P < 0.05$) with a row; different superscript lowercase letters indicate significant difference ($P < 0.05$) with a column. ¶ R, P values for the region; S, P values for lactational stage; R × S, P values for the region by lactational stage. NS, $P > 0.05$, *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$.

Table S4. Distribution characteristics of fatty acids in breast milk of this study.

	Content		Relative content	
	Total FAs (%)	<i>sn</i> -2 FAs (%)	<i>sn</i> -2 (%)	<i>sn</i> -1,3 (%)
10:0	0.96 ± 0.54	0.42 ± 0.28	23.50 ± 14.56	76.50 ± 19.62
14:0	4.59 ± 1.88	8.46 ± 3.14	62.81 ± 9.89	37.19 ± 9.91
16:0	21.39 ± 2.50	50.08 ± 5.62	78.56 ± 8.12	21.44 ± 8.13
18:0	4.90 ± 1.00	1.60 ± 0.82	10.67 ± 4.35	89.33 ± 4.35
18:1 n-9	34.51 ± 4.01	14.64 ± 3.37	14.08 ± 2.52	85.92 ± 2.53
18:2 n-6	21.47 ± 4.22	11.94 ± 3.09	18.66 ± 3.83	81.34 ± 3.84
18:3 n-3	1.39 ± 0.73	0.76 ± 0.46	18.61 ± 8.52	81.39 ± 8.53
20:4 n-6	0.68 ± 0.29	0.93 ± 0.32	44.59 ± 10.52	55.41 ± 9.56
22:6 n-3	0.30 ± 0.16	0.46 ± 0.17	53.33 ± 19.21	46.67 ± 21.39
SFA	36.91 ± 4.77	66.61 ± 6.01	60.67 ± 5.95	39.33 ± 5.96
MUFA	37.58 ± 4.32	18.25 ± 3.68	16.13 ± 2.35	83.87 ± 2.36
PUFA	25.50 ± 4.41	15.15 ± 3.54	19.97 ± 4.12	80.03 ± 4.12
n-6 PUFA	23.56 ± 4.29	13.69 ± 3.26	19.54 ± 3.98	80.46 ± 3.99
n-3 PUFA	1.95 ± 0.79	1.46 ± 0.55	26.29 ± 8.33	73.71 ± 8.34

The proportion of each FA in the internal position compared to the 3 positions of the milk TAG was calculated by the following equation (for example for DHA): %DHA (*sn*-2) = [(%DHA in 2-MAG)/(%DHA in TAG × 3)] × 100.

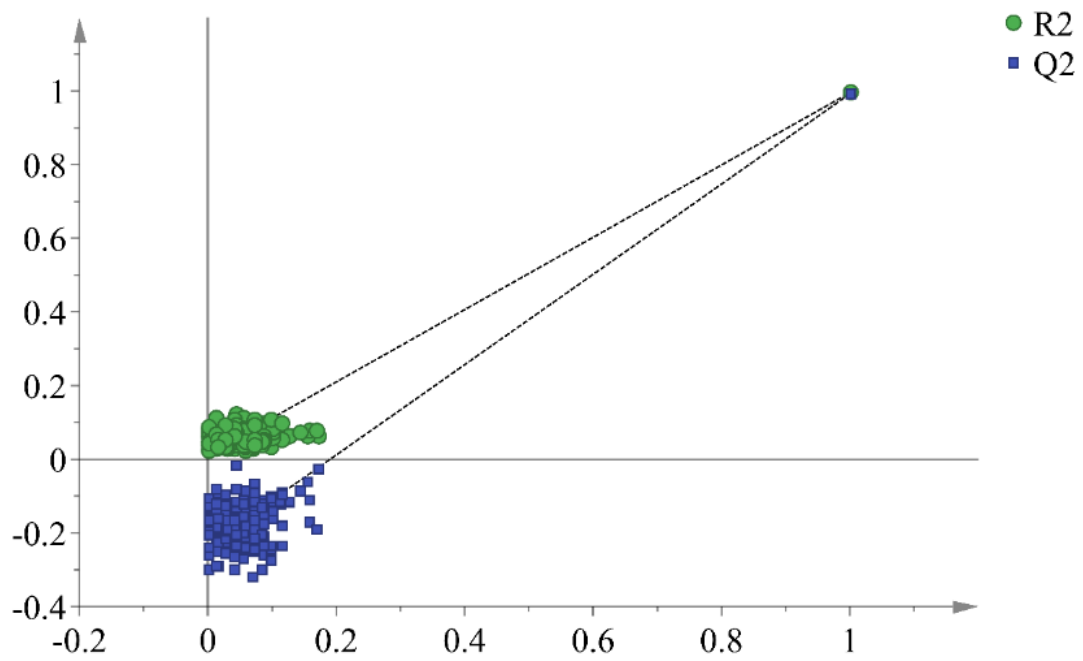


Figure S1. PLS-DA analysis goodness mode for total fatty acids in breast milk of three groups of edible oils in maternal diet.

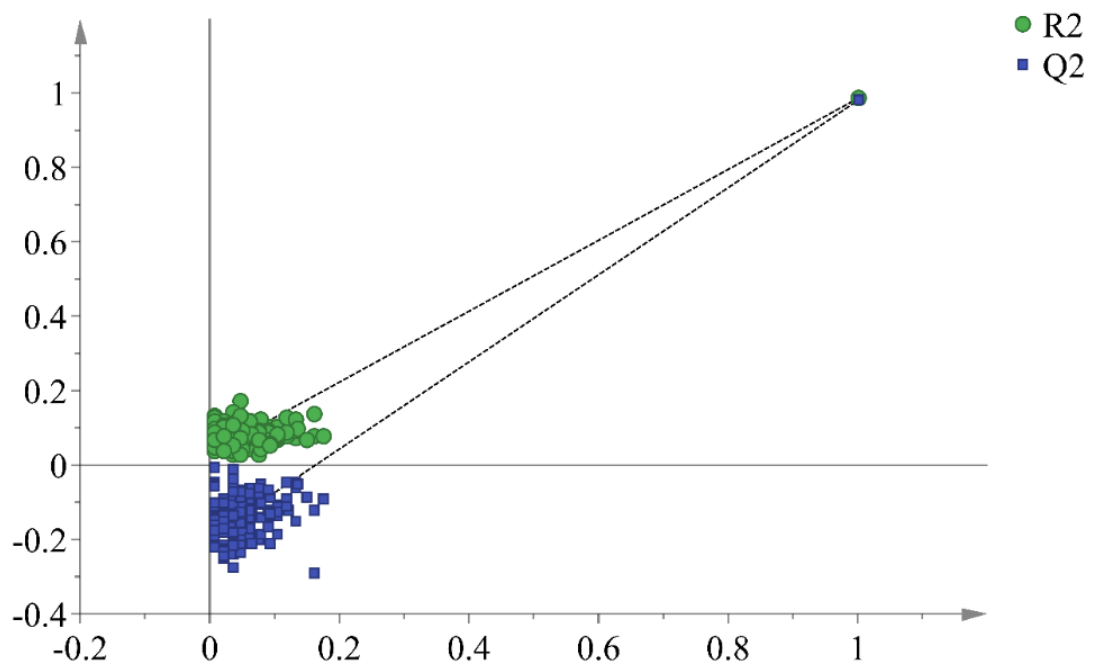


Figure S2. PLS-DA analysis goodness mode for *sn*-2 fatty acids in breast milk of three groups of edible oils in maternal diet.