

Systematic characterization and longitudinal study reveal distinguishing features of human milk oligosaccharides in China (Jiayi Wu)
Online Supplementary Material

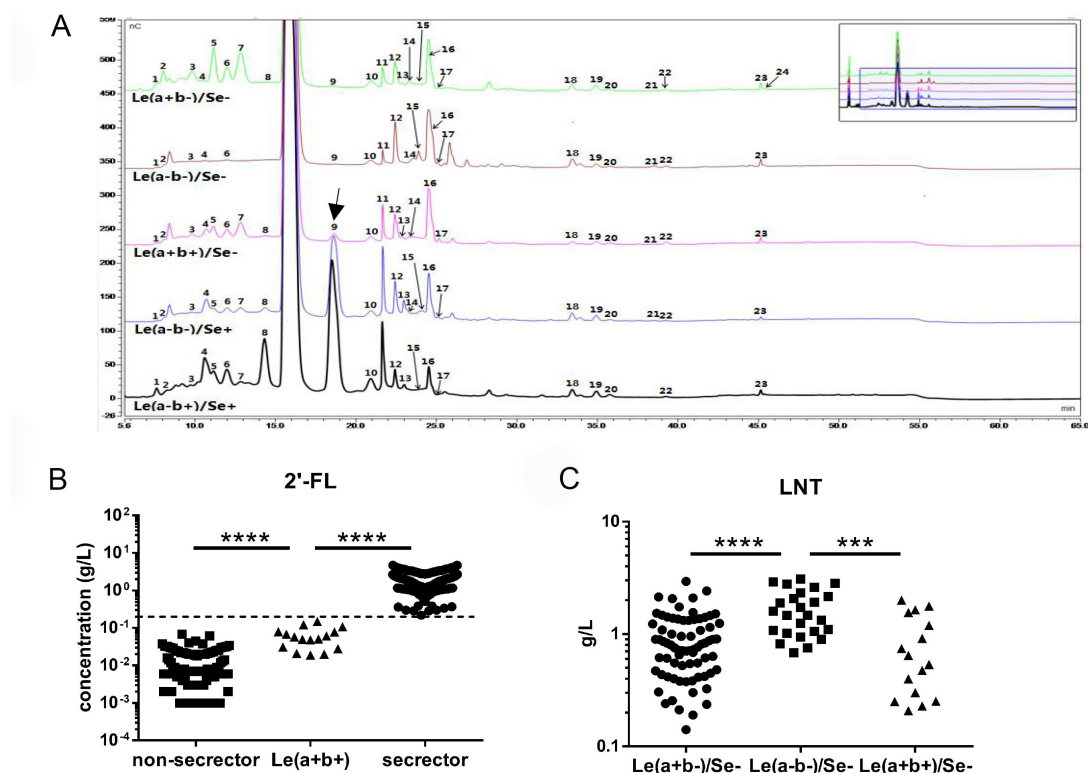
Supplemental Table 1 Characteristics of studied Chinese mothers and infants.

	Charateristics	Mean \pm SD ¹
Mothers	Age (years)	30.6 \pm 4.3
	Weight (kg)	55.7 \pm 7.4
	Height (cm)	159 \pm 5
	BMI ² (kg/m ²)	22.1 \pm 2.9
	Parity	1.4 \pm 0.5
	Cesarean delivery (%)	52.9
Infants	Males (%)	63.3
	Gestation age at birth (weeks)	39.0 \pm 1.2

¹Standard deviation, SD.

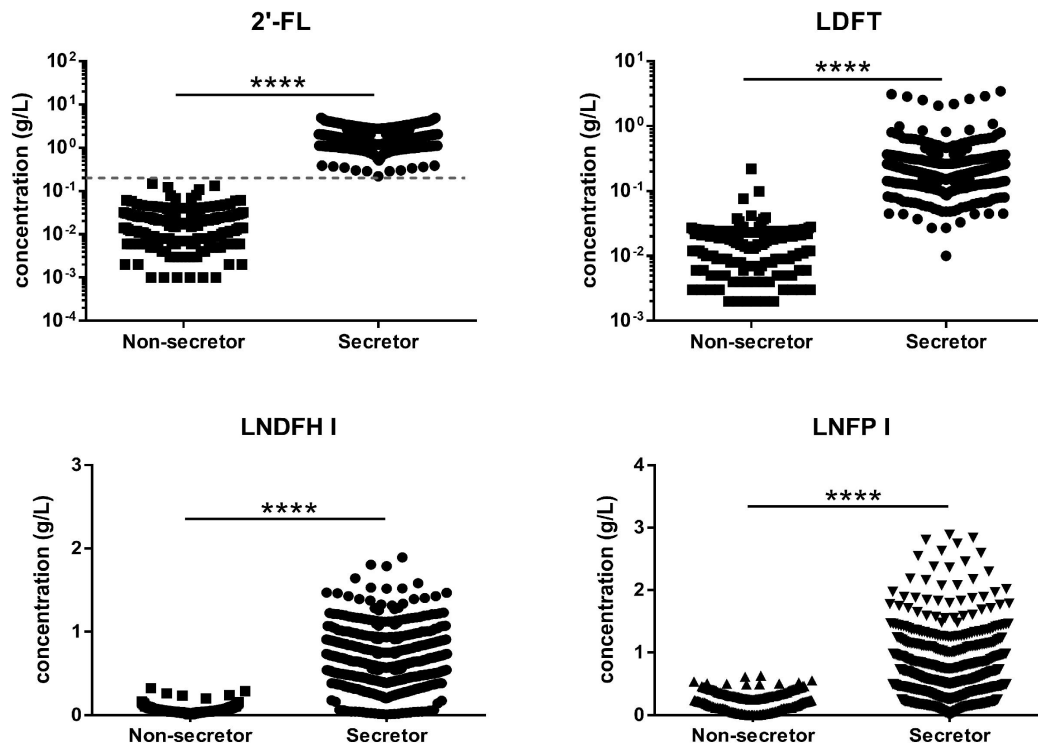
²Body Mass Index (BMI) = Weight(kg) / Height²(m²).

Supplemental Figure 1 HMOs composition in different Lewis blood types.



(A) Representative HPAEC chromatograms of 24 HMOs in milk samples of different Lewis blood types (Le(a±b±)) and secretor types (Se±). 1. LNnDFH, 2. LNDFH II, 3. DFLNH, 4. LNDFH I, 5. 3-FL, 6. A-Type-6, 7. LNFP II, 8. LDFT, 9. 2'-FL, 10. LNT2, 11. LNFP I, 12. LNnT, 13. LNnFP, 14. LNFP V, 15. p-LNnH&LNnH, 16. LNT, 17. LNnO, 18. LSTc, 19. 6'-SL, 20. 3'-SL, 21. LSTa, 22. LSTb, 23. DSLNT, 24. DS-L. (B) 2'-FL concentrations and (C) LNT concentrations in milk of different blood types (le(a±b±)) and secretor types (Se±). *** $P < 0.001$, **** $P < 0.0001$.

Supplemental Figure 2 Concentrations of α -1-2-fucosyltransferase products



2'-FL, LDFT, LNDFH I and LNFP I in milk of defined secretors and non-secretors according to 2'-FL concentration. Dash line indicated 0.2 g/L.

**** $P < 0.0001$.

Supplemental Figure 3 Concentrations (g/L) of 24 HMOs in milk of secretors and non-secretors during lactation.

	Day of lactation (Secretor)						Day of lactation (Non-secretor)					
	3 n=25	7 n=27	21 n=25	42 n=15	77 n=10	168 n=7	3 n=13	7 n=12	21 n=10	42 n=10	77 n=4	168 n=2
A												
LNnDFH	0.06±0.01a	0.04±0.00ab	0.02±0.00b	0.03±0.00ab	0.05±0.01ab	0.05±0.01ab	0.06±0.01	0.05±0.01	*0.03±0.00	0.08±0.03	0.04±0.01	0.06±0.00
LNDHF II	0.04±0.01	0.05±0.01	0.04±0.01	0.02±0.01	0.02±0.01	0.03±0.01	*0.17±0.05	**0.15±0.03	*0.16±0.04	**0.13±0.03	0.18±0.07	0.10±0.07
DFLNH	0.11±0.01a	0.10±0.01ab	0.10±0.01ab	0.10±0.01ab	0.08±0.01ab	0.06±0.00b	**0.25±0.04	**0.36±0.07	**0.35±0.07	*0.37±0.09	0.26±0.12	0.10±0.09
3-FL	0.25±0.03d	0.23±0.02d	0.33±0.03d	0.53±0.07c	0.77±0.09b	1.03±0.08a	**0.60±0.11	**0.60±0.10	**0.87±0.16	*1.30±0.24	1.58±0.54	1.64±1.19
LNFP II	0.12±0.02	0.16±0.01	0.15±0.01	0.14±0.02	0.12±0.02	0.12±0.02	**0.68±0.09	**0.87±0.11	**0.84±0.16	**0.48±0.07	0.68±0.14	*0.30±0.00
LNnFP	0.21±0.02a	0.20±0.03a	0.14±0.02ab	0.08±0.01bc	0.04±0.01c	0.01±0.00c	**0.02±0.01	*0.11±0.04	**0.05±0.02	*0.03±0.01	*0.01±0.00	0.02±0.01
LNFP V	0.02±0.00ab	0.04±0.01a	0.04±0.01a	0.02±0.00ab	0.01±0.00b	0.01±0.00b	**0.08±0.02	*0.10±0.02	*0.08±0.01	**0.05±0.01	**0.04±0.01	**0.03±0.01
Total	0.77±0.05c	0.77±0.03c	0.79±0.04c	0.92±0.09bc	1.09±0.10b	1.30±0.09a	**1.70±0.29	**1.97±0.35	**2.22±0.43	**2.30±0.45	2.63±0.90	2.11±1.48
B												
LNDFH I	1.00±0.06a	0.98±0.07a	0.83±0.05a	0.72±0.07ab	0.54±0.07bc	0.45±0.04c	**0.09±0.02	**0.08±0.02	**0.07±0.01	**0.09±0.03	**0.06±0.01	**0.06±0.01
A-Type-6	0.40±0.03a	0.33±0.03ab	0.24±0.02b	0.29±0.03ab	0.32±0.04ab	0.30±0.02ab	*0.59±0.06x	*0.48±0.06xy	0.38±0.06xy	0.33±0.05xy	0.23±0.08y	0.32±0.13xy
LDFT	0.38±0.05	0.22±0.01	0.20±0.02	0.24±0.05	0.22±0.03	0.22±0.03	**0.02±0.01	**0.01±0.00	**0.02±0.00	**0.02±0.00	*0.02±0.01	*0.02±0.00
2'-FL	3.02±0.14a	2.54±0.18ab	2.35±0.15b	1.96±0.14bc	1.56±0.15cd	1.28±0.10d	**0.05±0.01	**0.04±0.01	**0.02±0.01	**0.02±0.01	**0.01±0.00	**0.01±0.01
LNFP I	1.44±0.08a	1.49±0.12a	1.11±0.09a	0.77±0.07b	0.44±0.08b	0.40±0.09b	**0.23±0.04	**0.31±0.06	**0.34±0.06	**0.25±0.04	*0.13±0.04	0.18±0.03
Total	6.23±0.19a	5.56±0.34ab	4.73±0.23bc	3.98±0.23cd	3.08±0.25de	2.64±0.18e	**0.97±0.07x	**0.92±0.09x	**0.82±0.07xy	**0.68±0.09xy	**0.45±0.09y	**0.58±0.15xy
C												
LNT2	0.13±0.01a	0.07±0.01b	0.04±0.00c	0.03±0.00c	0.03±0.00c	0.02±0.00c	0.14±0.02x	0.08±0.01y	0.04±0.01yz	0.03±0.01yz	*0.02±0.01z	*0.01±0.01z
LNnT	0.55±0.03a	0.56±0.03a	0.43±0.03b	0.34±0.03bc	0.25±0.03cd	0.15±0.02d	*0.72±0.07x	*0.74±0.07x	*0.76±0.07x	0.46±0.07xy	0.27±0.03y	0.12±0.08y
LNnH#	0.07±0.01ab	0.08±0.01a	0.05±0.01abc	0.04±0.01bc	0.02±0.00cd	0.01±0.00d	*0.04±0.01	*0.04±0.01	0.03±0.01	0.02±0.01	0.03±0.02	0.00±0.00
LNT	0.70±0.08bc	1.05±0.06a	0.85±0.06ab	0.63±0.08bc	0.44±0.08c	0.43±0.08c	**1.69±0.17x	**1.82±0.15x	**1.80±0.21x	0.91±0.15xy	*0.96±0.22xy	0.48±0.24y
LNnO	0.09±0.02ab	0.13±0.02a	0.10±0.01ab	0.05±0.01bc	0.03±0.01c	0.02±0.01c	*0.23±0.05	**0.33±0.05	*0.27±0.07	0.13±0.05	0.06±0.04	0.05±0.03
Total	1.54±0.11b	1.89±0.08a	1.47±0.08b	1.10±0.10c	0.78±0.11de	0.62±0.09e	**2.82±0.22x	**3.00±0.20x	**2.89±0.23x	1.55±0.22y	*1.34±0.28y	0.66±0.20y
D												
LSTc	0.75±0.05a	0.65±0.05a	0.32±0.04b	0.18±0.03bc	0.08±0.02c	0.01±0.00c	*0.54±0.06x	*0.47±0.06x	0.23±0.04y	*0.09±0.02y	0.05±0.03y	0.01±0.00y
6'-SL	0.50±0.03a	0.63±0.03a	0.56±0.04a	0.32±0.04b	0.15±0.02c	0.06±0.01c	0.44±0.04x	0.59±0.04x	0.56±0.05x	0.27±0.02y	0.16±0.02yz	0.06±0.03z
3'-SL	0.28±0.01a	0.27±0.02a	0.24±0.01ab	0.20±0.02b	0.14±0.02c	0.13±0.02c	0.25±0.01xy	0.27±0.02x	0.24±0.03xy	0.16±0.02yz	0.11±0.00z	0.08±0.00z
LSTa	0.14±0.02a	0.17±0.02a	0.08±0.01b	0.03±0.01b	0.01±0.00b	0.02±0.00b	0.15±0.03xy	0.18±0.03x	0.08±0.02xy	0.04±0.01xy	*0.02±0.00xy	0.00±0.00y
LSTb	0.05±0.00a	0.05±0.00a	0.05±0.00a	0.05±0.01a	0.04±0.01ab	0.03±0.00b	**0.09±0.01	**0.09±0.01	**0.09±0.01	0.06±0.01	**0.07±0.00	0.04±0.00
DSLNT	0.32±0.02a	0.32±0.03a	0.30±0.03a	0.23±0.03a	0.14±0.02b	0.10±0.01b	0.35±0.03x	0.36±0.03x	0.31±0.04x	0.16±0.02y	0.15±0.03y	0.10±0.03y
DS-L	0.01±0.00	0.03±0.02	0.02±0.01	0.00±0.00	0.00±0.00	0.00±0.00	0.00±0.00	0.02±0.01	0.02±0.01	0.00±0.00	0.00±0.00	0.00±0.00
Total	2.05±0.10a	2.09±0.10a	1.55±0.09b	1.01±0.09c	0.56±0.07d	0.33±0.03d	1.82±0.10x	1.97±0.11x	1.53±0.11x	*0.77±0.06y	0.57±0.02y	0.30±0.02y

Changes of 24 HMOs as groups in subtypes (A) acidic HMOs, (B) non-fucosylated HMOs, (C) α -1-3/4-fucosylated HMOs and (D) α -1-2-fucosylated HMOs on day3, 7, 21, 42, 77 and 168 during lactation. All values are means \pm SEMs. "LNnH#" was a mixture of p-LNnH & LNnH. "a", "b", ... and "x", "y", ... indicated differences among different time points in secretors and non-secretors, respectively. Asterisks indicated statistical significance between secretors and non-secretors at the same lactation time.

* $P < 0.05$, ** $P < 0.01$, and *** $P < 0.001$.