

# 1 Electronic Supplementary Material (ESI) for Food & Function

## 2 Supplementary Figures

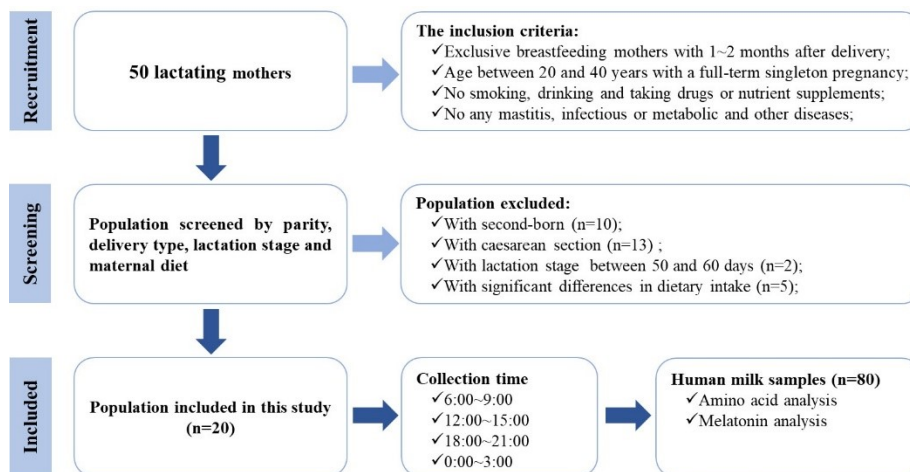


Figure S1. Study protocol flowchart.

## 5 Supplementary Tables

6 **Table S1** Diets and characteristics of study participants

Variable	Total (N=20)	Male (N=10)	Female (N=10)	P-Value
Basic information				
Maternal age (years)	28.50±2.46	28.30 ±2.11	28.70±2.87	0.481
Maternal BMI (kg/m <sup>2</sup> )	23.68±2.44	22.68±2.68	24.68±1.78	0.054
Gestational age (weeks)	39.77±1.04	39.46 ±1.00	40.09± 1.04	0.165
Delivery type (vaginal delivery%)	100%	100.00%	100.00%	——
Parity (firstborn%)	100%	100.00%	100.00%	——
Lactation stage (days)	31.20±2.07	30.70±1.64	31.70±2.41	0.436
Birth weight of infants (kg)	3.34±0.28	3.41±0.30	3.28±0.25	0.29
Current weight of infants (kg)	4.59±0.37	4.76±0.36	4.41±0.29	0.063
Diet (24h dietary review)				
Energy intake (kcal/day)	1820.4±88.01	1806.5±75.89	1834.3±100.82	0.495
Protein intake (g/day)	76.42±5.39	77.73±5.31	75.11±5.42	0.289
Fat intake (g/day)	61.58±8.89	59.72±6.56	63.44±10.78	0.364
Carbohydrates intake (g/day)	246.02±11.85	245.39±11.55	246.65±12.74	0.819
Dietary fiber intake (g/day)	13.41±1.65	13.38±1.27	13.43±2.03	0.948
Vitamin A intake (μg/day)	550.37±264.5	597.15±355.48	503.58±128.32	0.444
Vitamin E intake (mg/day)	16.76±2.61	16.93±1.99	16.59±3.22	0.779
Vitamin B1 intake (mg/day)	0.85±0.14	0.83±0.13	0.86±0.16	0.652
Vitamin B2 intake (mg/day)	1.1±0.16	1.12±0.14	1.07±0.19	0.51
Vitamin B6 intake (mg/day)	0.71±0.23	0.67±0.24	0.74±0.22	0.508
Vitamin B9 intake (μg/day)	230.35±67.32	245.6±64.68	215.09±69.77	0.324
Vitamin B12 intake (μg/day)	2.51±1.21	2.76±1.49	2.25±0.84	0.359
Vitamin C intake (mg/day)	76.03±36.21	80.57±37.16	71.48±36.61	0.588
Vitamin D intake (μg/day)	3.57±0.85	3.29±0.6	3.85±0.99	0.145
Ca intake (mg/day)	566.34±88.2	584.9±88.4	547.77±88.54	0.36
Na intake (mg/day)	2384.77±488.36	2477.65±529.73	2291.89±451.33	0.41
Fe intake (mg/day)	16.34±1.89	16.96±1.85	15.72±1.81	0.147
K intake (mg/day)	2005.36±179.24	1998.66±163.23	2012.06±202.69	0.872
Zn intake (mg/day)	9.39±1.13	9.72±1.08	9.06±1.14	0.201
Cu intake (mg/day)	1.68±0.32	1.66±0.34	1.7±0.3	0.785
I intake (μg/day)	120.57±14.83	125.54±18.76	115.6±7.59	0.138
Se intake (μg/day)	49.82±10.72	49.33±13.97	50.3±6.86	0.846

8 **Table S2** Dose translation from mouse to human

Animal dose	Equivalent dose of one-month-old infant with body weight of 4.5 kg	Human milk concentration calculated based on 4.5 kg infant consuming 700 mL human milk in one day
250 mg/kg histidine	55 mg/kg histidine	0.35 mg/ml histidine
500 mg/kg histidine	110 mg/kg histidine	0.71 mg/ml histidine
400 mg/kg tyrosine	88 mg/kg tyrosine	0.57 mg/ml tyrosine
800 mg/kg tyrosine	176 mg/kg tyrosine	1.13 mg/ml tyrosine
150 mg/kg tryptophan	33 mg/kg tryptophan	0.21 mg/ml tryptophan
300 mg/kg tryptophan	66 mg/kg tryptophan	0.42 mg/ml tryptophan
15 mg/kg melatonin	3.3 mg/kg melatonin	0.02 mg/ml melatonin
30 mg/kg melatonin	6.6 mg/kg melatonin	0.04 mg/ml melatonin

9 According to the dosage problem of pharmacological experiment design, the dosage from mice  
10 to humans can be converted into the following formula:  $D_b' = D_a' \times S_a \times R_{ab} \times S_b$ , where  $D_a'$  and  $D_b'$   
11 are the dose of non-standard body weight,  $S_a$  and  $S_b$  are the correction factor for non-standard  
12 weight animals and  $R_{ab}$  is the conversion coefficient. It is known that the conversion coefficient  
13 from mice to human ( $R_{ab}$ ) is 0.081, the correction factor for non-standard weight mice ( $S_a$ ) is 1.145,  
14 the correction factor for non-standard weight infant ( $S_b$ ) is 2.37. According to the formula, when the  
15 gavage dose of 30 g mice is 250 or 500 mg/kg histidine, the intake dose of 4.5 kg infant is 55 mg/kg  
16 and 110 mg/kg histidine. When the gavage dose of 30 g mice is 400 or 800 mg/kg tyrosine, the  
17 intake dose of 4.5 kg infant is 88 mg/kg and 176 mg/kg tyrosine. When the gavage dose of 30 g  
18 mice is 150 or 300 mg/kg tryptophan, the intake dose of 4.5 kg infant is 33 mg/kg and 66 mg/kg  
19 tryptophan. When the gavage dose of 30 g mice is 15 or 30 mg/kg melatonin, the intake dose of 4.5  
20 kg infant is 3.3 mg/kg and 6.6 mg/kg melatonin.

21 Reference: Wei Wei, Wu Ximei, Li Yuanjian, et al. Experimental Methodology of Pharmacological  
22 (Fourth Edition)[M]. Beijing: People's Medical Publishing House, 2010: 69-72.