

Supplementary Table 1. Main characteristics of studies included in the systematic review and meta-analysis

Author	Year of publication	Country	Study design	Sample size	Age (mean±SD)	Milk type
Christine A Butts (Butts et al., 2018)	2018	New Zealand	observational	78	31±5	mature milk
R. Barreiro (Barreiro et al., 2018)	2018	Spain	cross country comparison	16	1.5	mature milk
Mi-ya Su (Su et al., 2018)	2018	China	cross sectional	900	1.5	mature milk
Chang Gao (Gao et al., 2018)	2018	Cambodia and Australia	cross sectional	267		
Uma Nayak (Nayak et al., 2017)	2017	Bangladesh, India	cross sectional	471	24.6±4.6	mature milk
Hyesook Kim (Kim et al., 2017)	2017	South Korea	cross sectional	238	31.6±3.2	
Pilar Go´mez-Corte´s (Gómez-Cortés and de la Fuente, 2017)	2017	Northern Nigeria	cross sectional	60	29.1±5.9	
Francesca Giuffrida (Giuffrida et al., 2016)	2016	China	cross-sectional	539	4.5	3 types*
V Grote (Grote et al., 2016)	2016	Italy	cross sectional	30	32.4 ±4.4	mature milk
Jiajing Jiang (Jiang et al., 2016)	2016	China	cross sectional	477	27.2±3.5	3 types colostrum and mature milk
Krisztina Mihályi (Mihályi et al., 2015)	2015	Hungary	cross sectional	87	32.9	
Yang Titi (Yang et al., 2014)	2014	China	cross sectional	436	27.2±3.9	3 types colostrum and mature milk
Angeliki Antonakou (Antonakou et al., 2013)	2013	Greek	cross sectional	127	32.5±3.1	mature milk
Tali Silberstein (Silberstein et al., 2013)	2013	Israel	cross sectional	48	31±6	mature milk
Oshra Saphier (Saphier et al., 2013)	2013	Israel	cross sectional	29		mature milk
Greta Krešić (Krešić et al., 2013)	2013	Croatia	cross sectional	83	31.8±4.6	mature milk transitional and mature milk
Akmar Zuraini Daud (Zuraini et al., 2013)	2013	Malaysia	cross-sectional	101		transitional and mature milk
Susmita Roy (Roy et al., 2012)	2012	India	cross sectional cross sectional	135	24.18±0.77	mature milk
Heidi J. Urwin (Urwin et al., 2013)	2012	China	observational	125	25±0.8	3 types
Beheshteh Olang (Olang et al., 2012)	2012	Iran	cross sectional	120	26.6±6.7	colostrum
Yu-dong Shi (Shi et al., 2011)	2011	China	cross sectional	66	28.3±3.9	3 types
E´va Szabo (Szabó et al., 2010)	2010	Germany	birth cohort	462	30.8±5.7	mature milk

Zhong-Xiao Wan (Wan et al., 2010)	2010	China	cross sectional	52	2.66	
Yongmei Peng (Peng et al., 2009)	2009	China	cross sectional	102	26.96±2.82	colostrum
Gu'lhane Samur (Samur et al., 2009)	2009	Turkey	cross sectional	50	26.16±5.49	mature milk
Flávia Meneses (Meneses et al., 2008)	2008	Brazil	cross sectional	30	16.6±1.4	mature milk
M. Ribeiro (Ribeiro et al., 2008)	2008	Portugal	cross sectional	31	30.9±3.9	transitional and mature milk
YM Peng (Peng et al., 2007)	2007	China	cross sectional	45	27.5±3.2	colostrum and mature milk
P. Marhol (Marhol et al., 2007)	2007	Roma and Czech	cross sectional	64	24.38±6.07	colostrum and transitional milk
Remko S. Kuipers (Kuipers et al., 2007)	2007	Tanzania	cross sectional	208	26±4.16	
I. Golfetto (Golfetto et al., 2007)	2007	Thailand and Korea	cross sectional	73	4	mature milk and transition milk
Pilar Luna (Luna et al., 2007)	2007	Spain	cross sectional	39	3.16	mature milk
YM Peng (Peng et al., 2007)	2007	China	cross sectional	45	27.5±3.2	colostrum and mature milk
A.S. Olafsdottir (Olafsdottir et al., 2006)	2006	Iceland	observational	77	31±4	mature milk
YY Al-Tamer (Al-Tamer and Mahmood, 2006)	2006	Iraq	cross sectional	65	28.2±5.7	mature milk
Mingyan Xiang (Xiang et al., 2005)	2005	China and Sweden	cross sectional	42	27.4±0.8	
Erin E Mosley (Mosley et al., 2005)	2005	US	cross sectional	81		transitional milk
M.C. Mari'n (Marín et al., 2005)	2005	Argentina	cross sectional	46		mature milk
Juliana da Cunha (da Cunha et al., 2005)	2005	Brazil	cross sectional	77	23.6±4.5	transitional and mature milk
Aleix Sala-Vila (Sala-Vila et al., 2005)	2005	Spain	cross sectional	30	27.33±2.42	3 types
Maurício H.L. Silva (Silva et al., 2005)	2005	Brazil	cross sectional	8		mature milk
H Mojska (Mojska et al., 2003)	2003	Poland	cross sectional	100		colostrum and mature milk
A López-Lopez (Lopez-Lopez et al., 2002)	2002	Spain	cross sectional	120	27.13±3.21	3 types
Julia M Krasevec (Krasevec et al., 2002)	2002	Cuba	cross sectional	73	26.8±4	mature milk
F. Marangoni (Marangoni et al., 2002)	2002	Italy	cross sectional	95		
Pavel Dlouhy (Dlouhý et al., 2002)	2002	Czech Republic, Prague	cross sectional	35		transitional milk
F. Scopesi (Scopesi et al., 2001)	2001	Italy	cross sectional	34	1.66	3 types
Natasha Fidler (Fidler et al., 2001)	2001	Slovenia	cross sectional	41		colostrum
Liwen Wang (Wang et al., 2000)	2000	Japan	cross sectional	20		

M Xiang (Xiang et al., 2000)	2000	Sweden	cross sectional	19	29.5±1	colostrum and mature milk
Prity Pugo-Gunsam (Pugo-Gunsam et al., 1999)	1999	France	cross sectional	28		colostrum and mature milk
M Xiang (Xiang et al., 1999)	1999	Northern China	cross sectional	41	26.6 ±1	mature milk
Barbara L.Schmeits (Schmeits et al., 1999b)	1999	Nigeria	cross sectional	18	24.3±4.8	transitional and mature milk
L. Hayat (Hayat et al., 1999)	1999	Kuwait	cross sectional	19	24.42±2.04	mature milk
Barbara L.Schmeits (Schmeits et al., 1999a)	1999	Nepal	cross sectional	48		transitional and mature milk
Sheila M Innis (Innis and King, 1999)	1999	Canada	cross sectional	62		mature milk
Ricardo Rueda (Rueda et al., 1998)	1998	Spain and Panama	cross sectional	16		3 types
G Rocquelin (Rocquelin et al., 1998)	1998	Brazzaville	cross sectional	102	27±6.8	mature milk
Giovanni Serra (Serra et al., 1997)	1997	Italy	cross sectional	20	2.5	3 types
Z.Y. Chen (Chen et al., 1997)	1997	Hong Kong and China	cross sectional	282		3 types
Abdullah A. Al-Othman (Al-Othman et al., 1996)	1996	Saudi	cross sectional	54	3.33	mature milk
Ruan Chulei (Chulei et al., 1995)	1995	China	cross sectional	146	3.16	mature milk
M. D. Laryea (Laryea et al., 1995)	1995	Sudan	cross sectional	77	27.8±3.83	mature milk
Z.-Y. Chen (Chen et al., 1995)	1995	Canada	cross sectional	198		mature milk
Maria Makrides (Makrides et al., 1995)	1995	Australia	cross sectional	23		mature milk
Josep Boatella (Boatella et al., 1993)	1993	Spain	cross sectional	38	3.5	mature milk
Ragnhild Rsnneberg (And and Skåra, 1992)	1992	Norway	cross sectional	11		colostrum
E Rudy Boersma (Boersma et al., 1991)	1991	St Lucia	cross sectional	36		3 types
Abiodun Ogunley (Ogunleye et al., 1991)	1991	Nigeria and Japan	cross sectional	73	1.33	mature milk
B. Koletzko, I (Koletzko et al., 1991)	1991	Nigeria and Germany	cross sectional	10		mature milk
Ann Prentice (Prentice et al., 1989)	1989	Gambia	cross sectional	23		
Sheila M. Innis (Innis and Kuhnlein, 1988)	1988	Canada	cross sectional			mature milk
Berthold Koletzko (Koletzko et al., 1988)	1988	Germany	cross sectional	15		
Marlene W Borschel (Borschel et al., 1986)	1986	Egypt and America	cross sectional	43	28±6.5	mature milk
Garry M Kneebone (Kneebone et al., 1985)	1985	Malaysia	cross sectional	51		mature milk
E. Vuori (Vuori et al., 1982)	1982	Finland	cross sectional	33		mature milk
Robert A. Gibson (Gibson and Kneebone, 1981)	1981	Australia	cross sectional	120		colostrum and mature milk

Boediman D (Boediman et al., 1979)	1979	Indonesia	cross sectional	197	
Edgar Lauber (Lauber and Reinhardt, 1979)	1979	Ivory coast	cross sectional	33	
Barbara A. Underwood (Underwood et al., 1970)	1970	Pakistan	cross sectional	379	mature milk

SD: standard deviation

*3 types: colostrum, transitional and mature milk

Supplementary Table 1 (Continued). Main characteristics of studies included in the systematic review and meta-analysis

Author	Year of publication	Time of breast milk collection	Method of FA measurement	Maternal diet assessment
Christine A Butts (Butts et al., 2018)	2018	6-8 weeks postpartum	Gas chromatography	Three-day food record
R. Barreiro (Barreiro et al., 2018)	2018	1-5 months postpartum	Gas chromatography	
Mi-ya Su (Su et al., 2018)	2018	at day 42 postpartum	Gas chromatography	24-h recall
Chang Gao (Gao et al., 2018)	2018	at 3 to 4 months postpartum	Capillary gas chromatography	
Uma Nayak (Nayak et al., 2017)	2017	6 weeks postpartum	Gas chromatography	
Hyesook Kim (Kim et al., 2017)	2017		Capillary gas chromatography	Three-day food record
Pilar Go´mez-Corte´s (G´omez-Cort´es and de la Fuente, 2017)	2017		High-resolution gas chromatography	
Francesca Giuffrida (Giuffrida et al., 2016)	2016	0–240 days postpartum, 0–4, 5–11, and 12–30 days, and 2–4, and 4–8 months	Gas chromatography	
V Grote (Grote et al., 2016)	2016	at one, two, three and six months postpartum	High-performance liquid chromatography	Three-day weighed record
Jiajing Jiang (Jiang et al., 2016)	2016	at the first day, at the day 14 and at the day 42	Gas chromatography	24-h food record
Krisztina Mihályi (Mihályi et al., 2015)	2015	at the 6th week and 6th month of lactation	Gas chromatography	
Yang Titi (Yang et al., 2014)	2014	5-11, 12-30, 31-60, 61-120, 121-240 days postpartum	Human milk analyser	
Angeliki Antonakou (Antonakou et al., 2013)	2013	1st, 3rd and 6th months postpartum	Gas chromatography	Three records in 64 mothers
Tali Silberstein (Silberstein et al., 2013)	2013	16-20 weeks postpartum		
Oshra Saphier (Saphier et al., 2013)	2013	8-12 weeks postpartum		
Greta Krešić (Krešić et al., 2013)	2013		Gas chromatography	Two 24-h recalls
Akmar Zuraini Daud (Zuraini et al., 2013)	2013	between 15 days and 6 months postpartum	Gas chromatography	FFQ
Susmita Roy (Roy et al., 2012)	2012	7-20 days postpartum	Gas liquid chromatography	FFQ
Heidi J. Urwin (Urwin et al., 2013)	2012	days 3–5 (colostrum), 14 and 28 post-partum	Gas chromatography	FFQ
Beheshteh Olang (Olang et al., 2012)	2012	8 to 72 h after delivery	Gas chromatography	FFQ
Yu-dong Shi (Shi et al., 2011)	2011	from 3rd to 180 days of lactation.	Gas chromatography	
E´va Szabo (Szabó et al., 2010)	2010	at the sixth week and sixth month of lactation	High resolution capillary gas–liquid chromatography	
Zhong-Xiao Wan (Wan et al., 2010)	2010	9–12 weeks postpartum	Gas chromatography	24-h recall
Yongmei Peng (Peng et al., 2009)	2009	at day 5	Capillary gas–liquid	Seven-day food record

Gu'lhán Samur (Samur et al., 2009)	2009	at 12–16 weeks postpartum	chromatography	
Flávia Meneses (Meneses et al., 2008)	2008	30–120 days postpartum	Gas–liquid chromatography	Three day food record
M. Ribeiro (Ribeiro et al., 2008)	2008	at day 7 and weeks 4, 8, 12 and 16 of lactation	Gas chromatography	Three 24-h recalls
YM Peng (Peng et al., 2007)	2007	at birth, day 5 and 42 postpartum	Gas chromatography	24-h recall
P. Marhol (Marhol et al., 2007)	2007	between the 3rd and 10th day after delivery	Capillary gas–liquid chromatography	
Remko S. Kuipers (Kuipers et al., 2007)	2007		Gas chromatography	FFQ
I. Golfetto (Golfetto et al., 2007)	2007	week 4 post-partum	Capillary gas chromatography	
Pilar Luna (Luna et al., 2007)	2007	between 2 and 18 weeks postpartum	Gas liquid chromatography	
YM Peng (Peng et al., 2007)	2007	at days 5 and 42	Gas chromatography	
A.S. Olafsdottir (Olafsdottir et al., 2006)	2006	2- and 4-month (± 7 days) postpartum	Capillary gas–liquid chromatography	
YY Al-Tamer (Al-Tamer and Mahmood, 2006)	2006	2- and 4-month (± 7 days) postpartum	Gas chromatography	24-h recall
Mingyan Xiang (Xiang et al., 2005)	2006	5 \pm 1 month postpartum	Capillary gas chromatography	
Erin E Mosley (Mosley et al., 2005)	2005		Gas chromatography	Three-day food record
M.C. Mari'n (Marín et al., 2005)	2005	During the first month postpartum (11.2 \pm 5.8 day)	Gas chromatography	
Juliana da Cunha (da Cunha et al., 2005)	2005	1-3 months postpartum	Gas liquid chromatography	FFQ
Aleix Sala-Vila (Sala-Vila et al., 2005)	2005	day 15 \pm 1 postpartum	Gas chromatography	
Mauri 'cio H.L. Silva (Silva et al., 2005)	2005	over the first 1-5 day, at 6-15 day, 16-30 day postpartum	Gas chromatography	
H Mojska (Mojska et al., 2003)	2005	between 4th and 13th lactation weeks	Gas chromatography	Questionnaire
A Lo 'pez-Lo 'pez (Lopez-Lopez et al., 2002)	2003	at 3–4 d, 5–6 wk and 9–10 wk postpartum	Gas-liquid chromatography	Seven-day food record
Julia M Krasevec (Krasevec et al., 2002)	2002		Gas chromatography	
F. Marangoni (Marangoni et al., 2002)	2002	2 months postpartum	Gas chromatography	
Pavel Dlouhy (Dlouhý et al., 2002)	2002	first day and at 3 months of lactation	Gas chromatography	
F. SCOPESI (Scopesi et al., 2001)	2002	during the first week after delivery	Capillary gas chromatography	
Natas'a Fidler (Fidler et al., 2001)	2001	on day1, day 4 and 7, and day 14, 21 and 28	High-resolution gas chromatography	Food record
Liwen Wang (Wang et al., 2000)	2001	on the third day postpartum	Capillary gas-liquid chromatography	24-h recall
M Xiang (Xiang et al., 2000)	2000		Gas chromatography	
Prity Pugo-Gunsam (Pugo-Gunsam et al., 1999)	2000	colostrum, 1 months, 3months postpartum	Gas chromatography	
	1999	at birth and on day 42	Gas chromatography	

M Xiang (Xiang et al., 1999)	1999	1 and 3 months postpartum	Gas chromatography	Three-day food record
Barbara L.Schmeits (Schmeits et al., 1999b)	1999	10-30 days postpartum	Capillary gas-liquid chromatography	
L. Hayat (Hayat et al., 1999)	1999	6-14 weeks postpartum	Split-injection capillary Gas-chromatography	FFQ and 24-h recall
Barbara L.Schmeits (Schmeits et al., 1999a)	1999	2-4 weeks postpartum	Gas chromatography	
Sheila M Innis (Innis and King, 1999)	1999	2 months postpartum	Gas chromatography	Three-day weighed record
Ricardo Rueda (Rueda et al., 1998)	1998	1-5 days, 6-15 days, 16-35 days postpartum	Gas-liquid chromatography	
G Rocquelin (Rocquelin et al., 1998)	1998	5±0.5 months postpartum	Gas-liquid chromatography	FFQ
Giovanni Serra (Serra et al., 1997)	1997	on the 1st, 4th, 7th, 14th, 21st and 28th day	High-resolution gas chromatography	
Z.Y. Chen (Chen et al., 1997)	1997	first 3 d followed by 2, 4, 6 weeks postpartum	Gas-liquid chromatography	Three-day food record
Abdullah A. Al-Othman (Al-Othman et al., 1996)	1996	3-4 months of lactation	Gas-liquid chromatography	
Ruan Chulei (Chulei et al., 1995)	1995	2-6 months postpartum	Gas chromatography	FFQ and 24-h recall
M. D. Laryea (Laryea et al., 1995)	1995	2-24 months postpartum (mean range: 7.8)	Capillary gas chromatography	ad-libitum diet
Z.-Y. Chen (Chen et al., 1995)	1995	3 to 4 week after parturition	Combination of capillary gas-liquid chromatography and silver nitrate thin-layer chromatography	
Maria Makrides (Makrides et al., 1995)	1995	6-30th weeks postpartum	Capillary gas chromatography	
Josep Boatella (Boatella et al., 1993)	1993	20-30 days after birth	Capillary gas chromatography	ad-libitum diet
Ragnhild Rsnneberg (And and Skåra, 1992)	1992	on day 2, 3 or 4 postpartum	Gas chromatography	
E Rudy Boersma (Boersma et al., 1991)	1991	0-4, 5-9, 10-30 days postpartum	Split-injection capillary gas chromatography	
Abiodun OGUNLEY (Ogunleye et al., 1991)	1991	60-100 days postpartum	Gas chromatography	
B. Koletzko, I (Koletzko et al., 1991)	1991	3-5 months postpartum	High-resolution capillary gas-liquid chromatography	
Ann Prentice (Prentice et al., 1989)	1989		Gas-liquid chromatography	Low fat (16%)
Sheila M. Innis (Innis and Kuhnlein, 1988)	1988	4-28 weeks postpartum	Gas-liquid chromatography	
Berthold Koletzko (Koletzko et al., 1988)	1988		Gas chromatography	24-h recall
Marlene W Borschel (Borschel et al., 1986)	1986	First 6 months of lactation	Gas-liquid chromatography	FFQ
Garry M Kneebone (Kneebone et al., 1985)	1985	one and 6 months postpartum	Gas chromatography	FFQ and 24-h recall
E. Vuori (Vuori et al., 1982)	1982	6-8 weeks postpartum, 17-22 weeks postpartum	Gas chromatography	Seven-day food record
Robert A. Gibson (Gibson and Kneebone, 1981)	1981	early (day 3-5), later (day 40 -45) in lactation	Gas liquid chromatography	
Boediman D (Boediman et al., 1979)	1979		Gas chromatography	
Edgar Lauber (Lauber and Reinhardt, 1979)	1979			

Barbara A. Underwood (Underwood et al.,
1970)

1970 at 6, 9, 12, 18, and 24 months postpartum

Gas chromatography

FA: fatty acid, FFQ: food frequency questionnaire

Supplementary Table 2. MOOSE Statement - Reporting Checklist for meta-analyses of observational studies

Reporting Criteria	Reported (Yes/No)	Reported on Page
Reporting of Background		
Problem definition	Yes	3
Hypothesis statement	Yes	3
Description of Study Outcome(s)	Yes	3
Type of exposure or intervention used	Yes	3
Type of study design used	Yes	4
Study population	Yes	3
Reporting of Search Strategy		
Qualifications of searchers (eg, librarians and investigators)	Yes	4
Search strategy, including time period included in the synthesis and keywords	Yes	4
Effort to include all available studies, including contact with authors	Yes	4
Databases and registries searched	Yes	4
Search software used, name and version, including special features used (eg, explosion)	Yes	6
Use of hand searching (eg, reference lists of obtained articles)	Yes	4
List of citations located and those excluded, including justification	Yes	6, 13
Method for addressing articles published in languages other than English	No (we used only English papers)	4 (English language was a criteria of included studies)
Method of handling abstracts and	No	4 (There was no related

unpublished studies		abstracts and unpublished studies to include in the current meta-analysis)
Description of any contact with authors	No	We access the pdf version of all related papers, thus there was no need to contact with authors.
Reporting of Methods		
Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested	Yes	4
Rationale for the selection and coding of data (eg, sound clinical principles or convenience)	Yes	4,5
Documentation of how data were classified and coded (eg, multiple raters, blinding, and interrater reliability)	Yes	4,5
Assessment of confounding (eg, comparability of cases and controls in studies where appropriate	Yes (There were no cases and controls, but possible sources of heterogeneity were explored and adopted by sensitivity analysis and meta regression.)	5,6
Assessment of study quality, including blinding of quality assessors; stratification or regression on possible predictors of study results	Yes	4,5
Assessment of heterogeneity	Yes	5,6
Description of statistical methods (eg, complete description of fixed or random	Yes	5,6

effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated		
Provision of appropriate tables and graphics	Yes	13-30
Reporting of Results		
Table giving descriptive information for each study included	Yes	14-21
Results of sensitivity testing (eg, subgroup analysis)	Yes	26-29
Indication of statistical uncertainty of findings	Yes	5,6
Reporting of Discussion		
Quantitative assessment of bias (eg, publication bias)	Yes	6
Justification for exclusion (eg, exclusion of non-English-language citations)	No (we used only English papers)	4 (English language was a criteria of included studies)
Assessment of quality of included studies	Yes	4,11
Reporting of Conclusions		
Consideration of alternative explanations for observed results	Yes	8-11
Generalization of the conclusions (ie, appropriate for the data presented and within the domain of the literature review)	Yes	11
Guidelines for future research	Yes	11
Disclosure of funding source	Yes	31