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Article

Impact of Donor Milk on Short- and Long-Term Growth of Very Low Birth Weight Infants

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Les résultats concernant la croissance des prématurés nourris avec du lait de donneuses sont contradictoires.

Objectif de l'étude: évaluer la relation entre la proportion de LM, Lait de don et formule donnés à des enfants prématurés et leur croissance staturo pondérale et PC.

- ▶ Étude rétrospective monocentrique à deux période différentes
- ▶ groupe 1 : 160 enfants
LM+FORMULE (janv 2011-dec 2012)
- ▶ groupe 2 : 162 enfants
- ▶ LM+LAIT DE DON(avr 2013-dec 2014)
- ▶ Inclusion des moins de 32 sa et moins de 1500g
- ▶ Suivi 4,8 et 20-24 mois

- ▶ Même composition de parentérale dans les deux groupes débuté à J0 et arrêt à 120ml/kg d'entérale

Groupe 1 LM+formule

début de l' alimentation quand le LM est disponible avec attente jusqu'à 5 jours puis début des formules si pas disponible (67 kcal/100ml puis 80 kcal/100ml à 140ml/kg)

Groupe 2 LM + DM

début de l' alimentation quand le LM est disponible attente jusqu'à 2 jours puis début du lait de donneuse si pas disponible jusqu'à 35 sa d'AGC. Utilisation de fortifiant à 140ml/kg, ajout de protéine si la croissance était pauvre ou l'urée<3,2mmo/l)

- ▶ Volume de ration 160ml/kg
- ▶ Sortie sous LM non fortifié ou lait de transition à 72Kcal/100ml
- ▶ Recueil des proportions de lait les 28 premiers jours
- ▶ Croissance monitorée à J0 -32 sa- sortie -4mois-8mois-20-24 mois
- ▶ Population référente la croissance des enfants ne recevant que du LM

Table 1. Cohort characteristics: Median (IQR) or *n* (%).

		Pre-DM <i>n</i> = 160	DM <i>n</i> = 161	<i>p</i> value pre-DM vs. DM Groups *
Birth weight (g)		1050 (750, 1220)	1000 (800, 1180)	0.80
Gestational age (weeks)		27.7 (26.1, 29.4)	27.7 (25.9, 29.3)	0.73
Female sex		72 (45.0)	74 (46.0)	0.86
Small for gestational age		27 (16.9)	21 (13.0)	0.34
Race/ethnicity	White	33 (20.6)	34 (21.1)	0.97
	Black	89 (55.6)	88 (54.7)	
	Hispanic	34 (21.3)	36 (22.4)	
	Other	4 (2.5)	3 (1.9)	
NICU length of stay (days)		71.0 (47.5, 106.0)	77.0 (52.5, 104.8)	0.43
Exclusive MOM feeds DOL 1–28		33 (20.6)	33 (20.5)	0.98
First feed MOM		144 (90.0)	116 (72.5)	<0.01
Entire cohort (<i>n</i> = 321)	Proportion MOM DOL 1–14	1.00 (0.92, 1.00)	1.00 (0.59, 1.00)	0.01
	Proportion MOM DOL 1–28	0.97 (0.35, 1.00)	0.99 (0.35, 1.00)	0.83
	Proportion DM DOL 1–14	0 (0, 0)	0 (0,0.40)	<0.01
	Proportion DM DOL 1–28	0 (0, 0)	0 (0,0.40)	<0.01

Table 1. Cont.

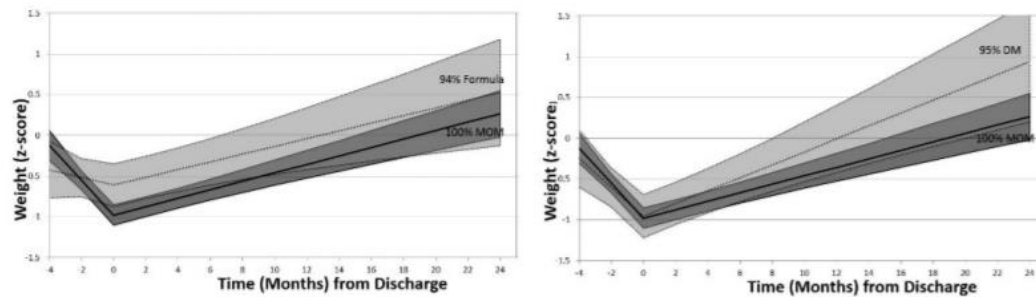
		Pre-DM <i>n</i> = 160	DM <i>n</i> = 161	<i>p</i> value pre-DM vs. DM Groups *
Cohort excluding infants fed exclusive MOM in first 28 DOL (<i>n</i> = 255)	Proportion MOM DOL 1–14	1.00 (0.85, 1.00)	0.97 (0.46, 1.00)	<0.01
	Proportion MOM DOL 1–28	0.84 (0.26, 1.00)	0.68 (0.11, 1.00)	0.48
	Proportion DM DOL 1–14	0 (0, 0)	0.02 (0, 0.51)	<0.01
	Proportion DM DOL 1-28	0 (0, 0)	0.32 (0, 0.79)	<0.01
	Proportion formula DOL 1-14	0 (0, 0.15)	0 (0, 0)	<0.01
	Proportion formula DOL 1-28	0.16 (0, 0.75)	0 (0, 0)	<0.01
First DOL of solely enteral feeds (no TPN/IVFs)		20.0 (15.0, 29.5) (<i>n</i> = 157)	14.0 (12.0, 23.0) (<i>n</i> = 147)	<0.01
Severe ROP ($\geq$ stage 3)		0 (0)	0 (0)	1
Significant brain Injury: severe IVH ($\geq$ grade III) or PVL		7 (4.4)	9/158 (5.7)	0.59
NEC ($\geq$ stage 2)		9 (5.6)	3/160 (1.9)	0.08
Attended $\geq$ 2 of 3 NICU follow-up clinic visits		106 (66.3)	91/155 (58.7)	0.17

MOM: Mother's own milk; DOL: Day of life; DM: Donor milk; TPN: Total parenteral nutrition; IVFs: Intravenous fluids; ROP: Retinopathy of prematurity; IVH: Intraventricular hemorrhage; PVL: Periventricular leukomalacia; NEC: Necrotizing enterocolitis. "Proportion:" Calculated for each infant as the cumulative volume of MOM, DM, or formula received divided by total volume of enteral feeds (MOM + DM + formula) received over the specified time period. * Chi square or Mann-Whitney U test, bold *p* values: significant at $p \leq 0.05$.

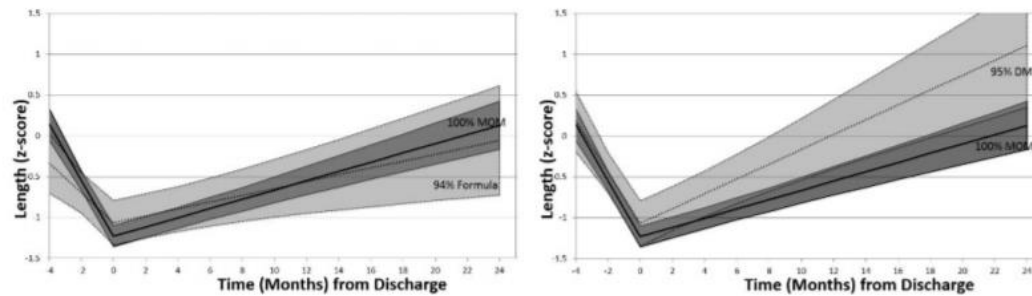
Table 2. Longitudinal anthropometrics for cohorts.

		Pre-DM	DM
Birth <i>n</i> = 321 (160 pre-DM; 161 DM)	Weight (g)	997 ± 245	998 ± 278
	Length (cm)	35.3 ± 3.1	35.5 ± 3.7
	HC (cm)	24.8 ± 2.1	24.9 ± 2.5
32 weeks corrected GA <i>n</i> = 307 (154 pre-DM; 153 DM)	Weight (g)	1442 ± 254	1380 ± 197
	Length (cm)	39.5 ± 2.0	39.6 ± 2.3
	HC (cm)	27.5 ± 1.4	27.4 ± 1.3
NICU Discharge <i>n</i> = 315 (160 pre-DM; 155 DM)	Weight (g)	2946 ± 901	2834 ± 981
	Length (cm)	47.1 ± 4.1	47.2 ± 4.4
	HC (cm)	33.4 ± 2.6	33.2 ± 2.6
4 months CA <i>n</i> = 215 (116 pre-DM; 99 DM)	Weight (g)	6477 ± 1022	6303 ± 1022
	Length (cm)	61.5 ± 3.0	61.3 ± 3.5
	HC (cm)	41.6 ± 1.7	41.0 ± 2.0
8 months CA <i>n</i> = 200 (108 pre-DM; 92 DM)	Weight (g)	8133 ± 1160	7840 ± 1196
	Length (cm)	68.9 ± 3.1	68.2 ± 3.4
	HC (cm)	44.3 ± 1.7	43.7 ± 1.9
20–24 months CA <i>n</i> = 156 (91 pre-DM; 65 DM)	Weight (g)	11,168 ± 1797	11,017 ± 1476
	Length (cm)	82.7 ± 4.2	83.1 ± 3.4
	HC (cm)	47.4 ± 1.8	46.9 ± 1.7

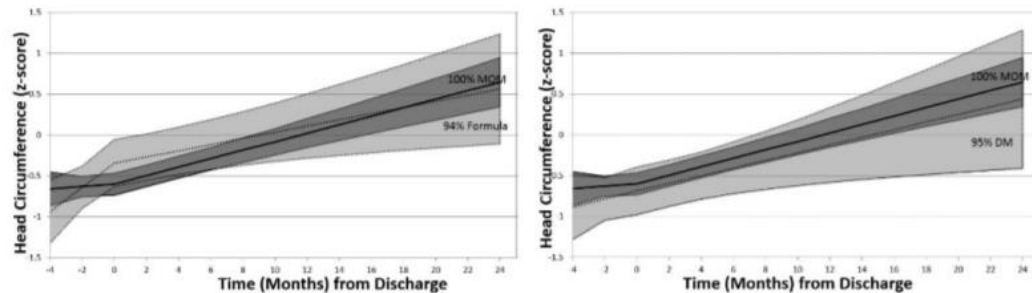
DM: Donor milk; HC: Head circumference; GA: Gestational age; CA: Corrected age.



(a) Weight with formula (left) and DM (right)



(b) Length with formula (left) and DM (right)



(c) HC with formula (left) and DM (right)

Figure 1. Model estimated anthropometric (z-score) changes over time comparing infants at 100% MOM feeds to infants at 95th percentile of cohort for formula or DM feeds. DM: Donor milk; HC: Head circumference. Mean z-score: Central solid (MOM) and dotted (formula or DM) lines; 95th% confidence intervals: Shaded areas (dark grey MOM, light grey formula or DM) bordered by solid (MOM) and dotted (formula or DM) lines.

Factors Influencing Donations to Human Milk Bank: A Systematic Review of Facilitators and Barriers

Leila Doshmangir,^{1,2} Maryam Naghshi,³ and Roghayeh Khabiri⁴

- ▶ Objectif: identifier les facteurs qui favorisent ou empêche le don de lait
- ▶ Review sur les articles abordant le lait de don, les donneuses ou les raisons pour donner (2000-2018)
- ▶ 26 barrières et 38 critères facilitateurs
- ▶ Dans toutes les études: donneuses plutôt éduquées et entre 1 et 3 enfants

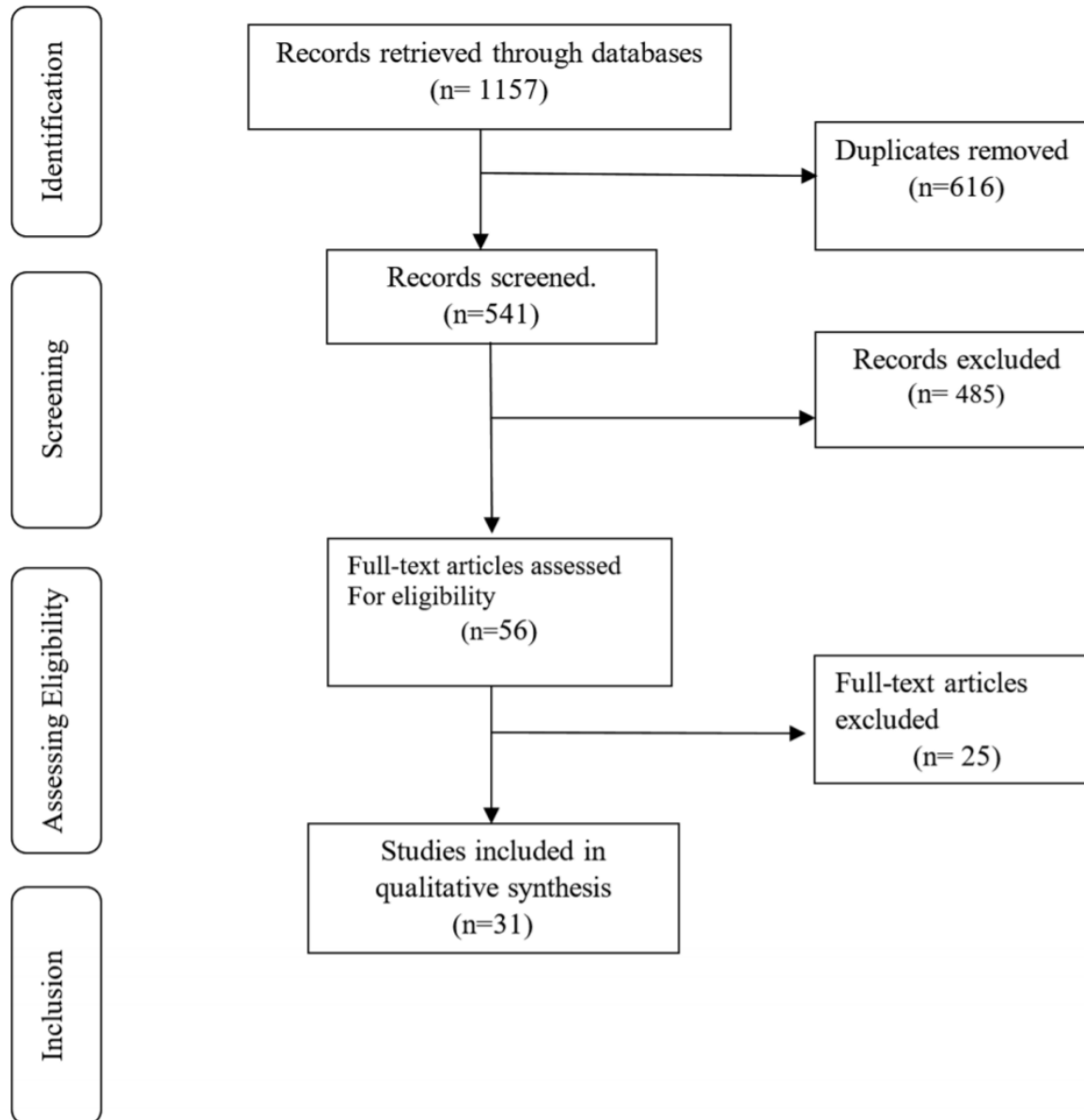


FIG. 1. Article search and review flowchart of studies.

TABLE 2. FACILITATORS INFLUENCING MILK DONATION

Individual facilitators

- (1) A strong belief in the value of breastfeeding^{13,27}
- (2) Helping and connecting^{13,17,37}
- (3) Having excess milk^{11,13,16,17,20-23,27,28,36}
- (4) Knowledge of the benefits of mother milk for preterm infants¹³
- (5) Sense of satisfaction gained from helping a child^{20,41}
- (6) Understanding the needs of the babies^{18,41}
- (7) Social involvement¹⁸
- (8) Having a history of milk donations²³
- (9) Knowing the needs of the milk bank²³
- (10) Hoping someone else will do the same for them if needed^{23,24,27,37}
- (11) Having a positive attitude toward milk donation²¹
- (12) Avoiding waste^{17,36}
- (13) Feeling of motherhood following a perinatal loss^{14,41}
- (14) Finding meaning in and integrating the experience of perinatal loss¹⁴
- (15) A way for bereaved mothers to grieve their loss¹⁴
- (16) Pumping milk to stimulate lactation²⁴
- (17) Having self-confidence^{17,37}
- (18) Financial inducement⁴³

Systemic facilitators

- (1) Verbal encouragement to donate¹⁹
- (2) Support from the milk banks for the donor¹⁹
- (3) Benefits for donors¹⁹
- (4) Provide guidance on appropriate procedures for collection and storage of milk at home¹⁹
- (5) Financial support¹⁹
- (6) Provision of information about donating during pregnancy/prenatal care^{19,21}
- (7) Visits of donors to the HMBs to understand the process of pasteurization^{17,19}
- (8) Health staff and professionals^{15,18,21,27,28,37,41}
- (9) Supporting bereaved mothers in their lactation needs^{14,41}

Social facilitators

- (1) Friends^{15,18,27}
- (2) Family^{17,18,21,27,28}
- (3) Sources of information regarding milk exchange^{13,27}
- (4) Altruism
- (5) Helping others^{13,14,21–24,37}
- (6) Media^{17,19,21,30}
- (7) Advertising¹⁸
- (8) Education^{21,25,26,30,34}
- (9) Social values³⁴
- (10) Society^{21,27,36}
- (11) Local culture³⁴

TABLE 3. BARRIERS TO MILK DONATION

Individual barriers

- (1) The need for the donor to plan for donating to the milk bank¹³
- (2) Anonymity of the identities of donors and recipients^{20,32}
- (3) Not qualifying for milk donation^{20,46}
- (4) Milk pasteurization^{13,35}
- (5) Willingness to help mothers and children that are not considered qualified by the milk bank²⁰
- (6) Pumping inconvenience^{13,20}
- (7) Donating milk through unofficial channels^{20,21}
- (8) Reduction of milk^{17,27}

Systemic barriers

- (1) Lack of health care centers as a source of information about milk exchange¹³
- (2) Lack of milk banks^{20,21}
- (3) Time-consuming process²⁰
- (4) The milk bank process^{13,20,21}
- (5) Lack of knowledge of other professionals²⁷
- (6) Lack of access to the milk bank^{27,46}
- (7) Lack of support from health professionals²¹
- (8) Long screening tests²⁵
- (9) Absence of personal connection in donating milk to a milk bank¹³

Social barriers

- (1) Lack of knowledge about milk banking^{13,17,20,21,35}
 - (2) Misconceptions about the costs of milk banks^{13,20}
 - (3) Not knowing whether the milk bank is for profit or nonprofit¹³
 - (4) Misinformation²⁷
 - (5) Resistance to creation of Western-style milk banks³²
 - (6) Religious beliefs^{11,16,20,26,30-33,35}
 - (7) Cultural beliefs^{11,31}
 - (8) Incomprehension at work²⁷
 - (9) Concerns about the safety of the donated milk^{21,26,30}
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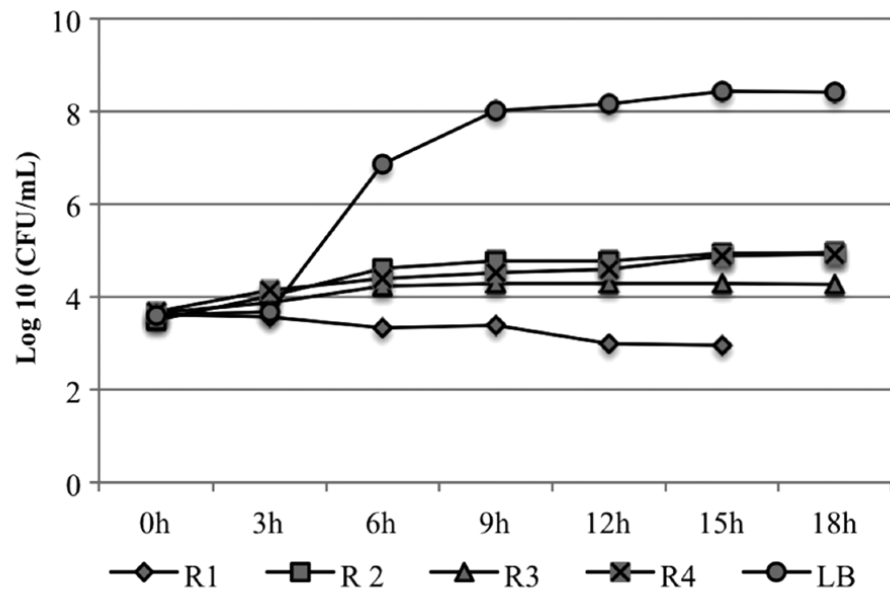
Staphylococcus aureus Enterotoxin Production in Raw and Pasteurized Milk: The Effect of Selected Different Storage Durations and Temperatures

Yahya Almutawif,¹⁻³ Benjamin Hartmann,⁴⁻⁶ Megan Lloyd,^{2,3,6,7} Ching Tat Lai,⁸
Alethea Rea,⁹ and Donna Geddes⁸

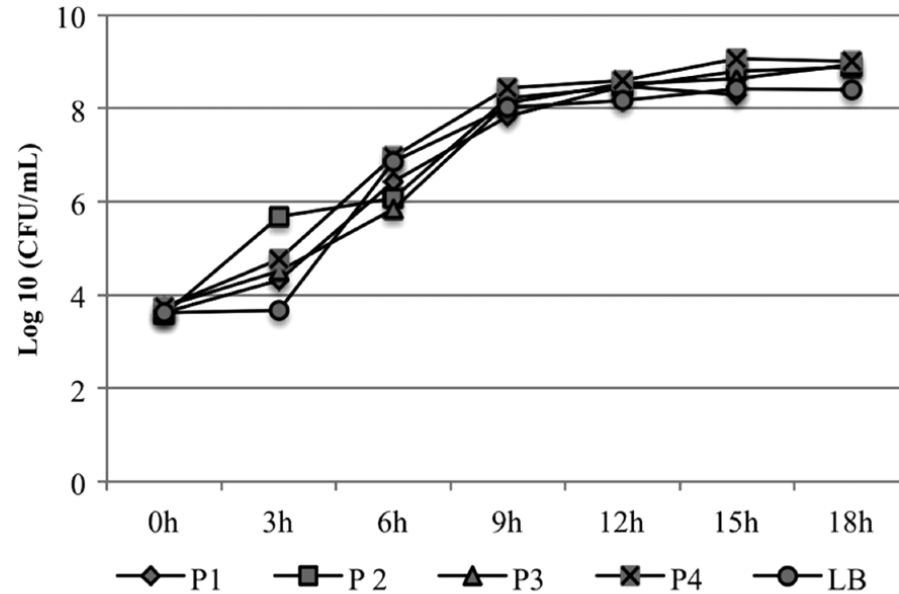
- ▶ SA le pathogène le plus retrouvé dans le LD
- ▶ Sécréteur de toxines thermostables
- ▶ Disparité de seuil international
- ▶ Comparaison de la conservation du lait (cru ou pasteurisé) avec présence de SA

- ▶ Inoculation de 10,3 SA dans du lait cru, du lait pasteurisé et une solution contrôle stérile

a *S. aureus* in raw HM at 37°C



S. aureus in pasteurized HM at 37°C



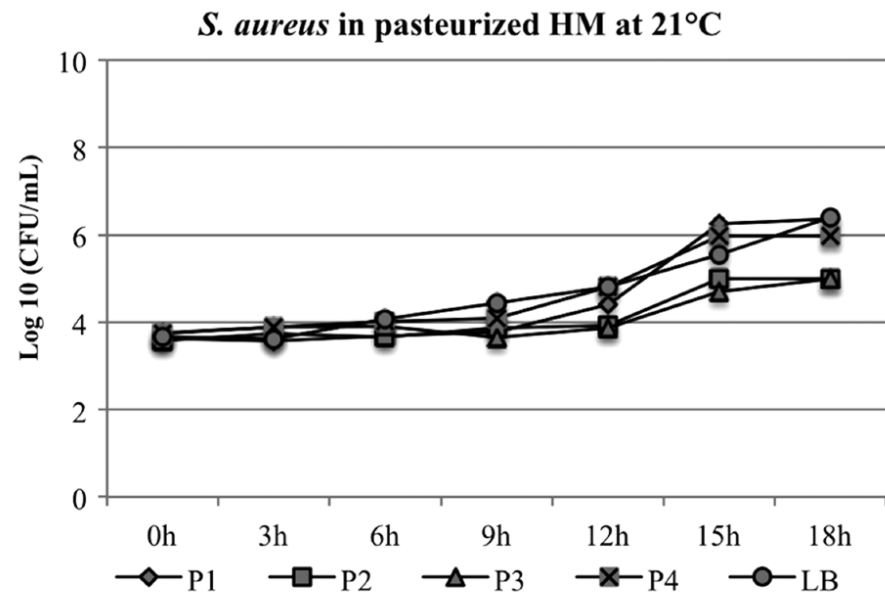
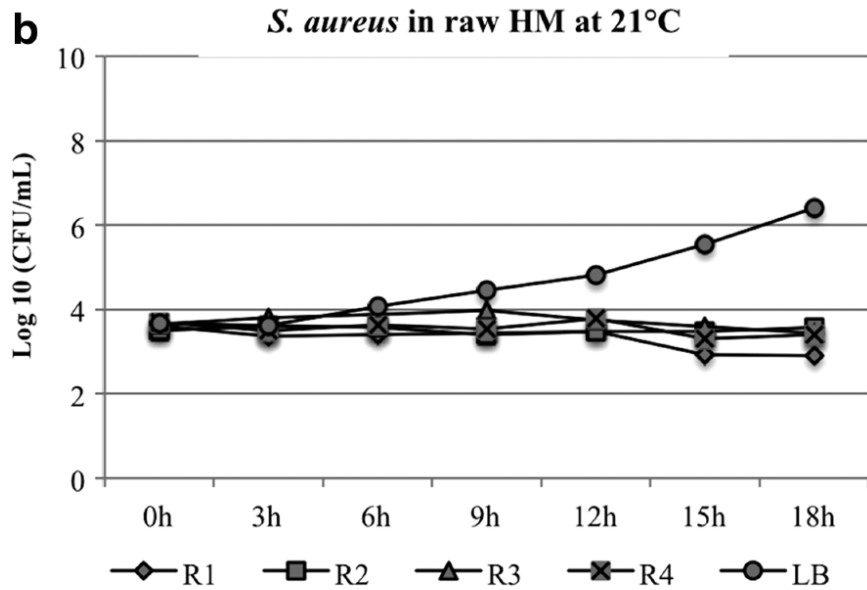
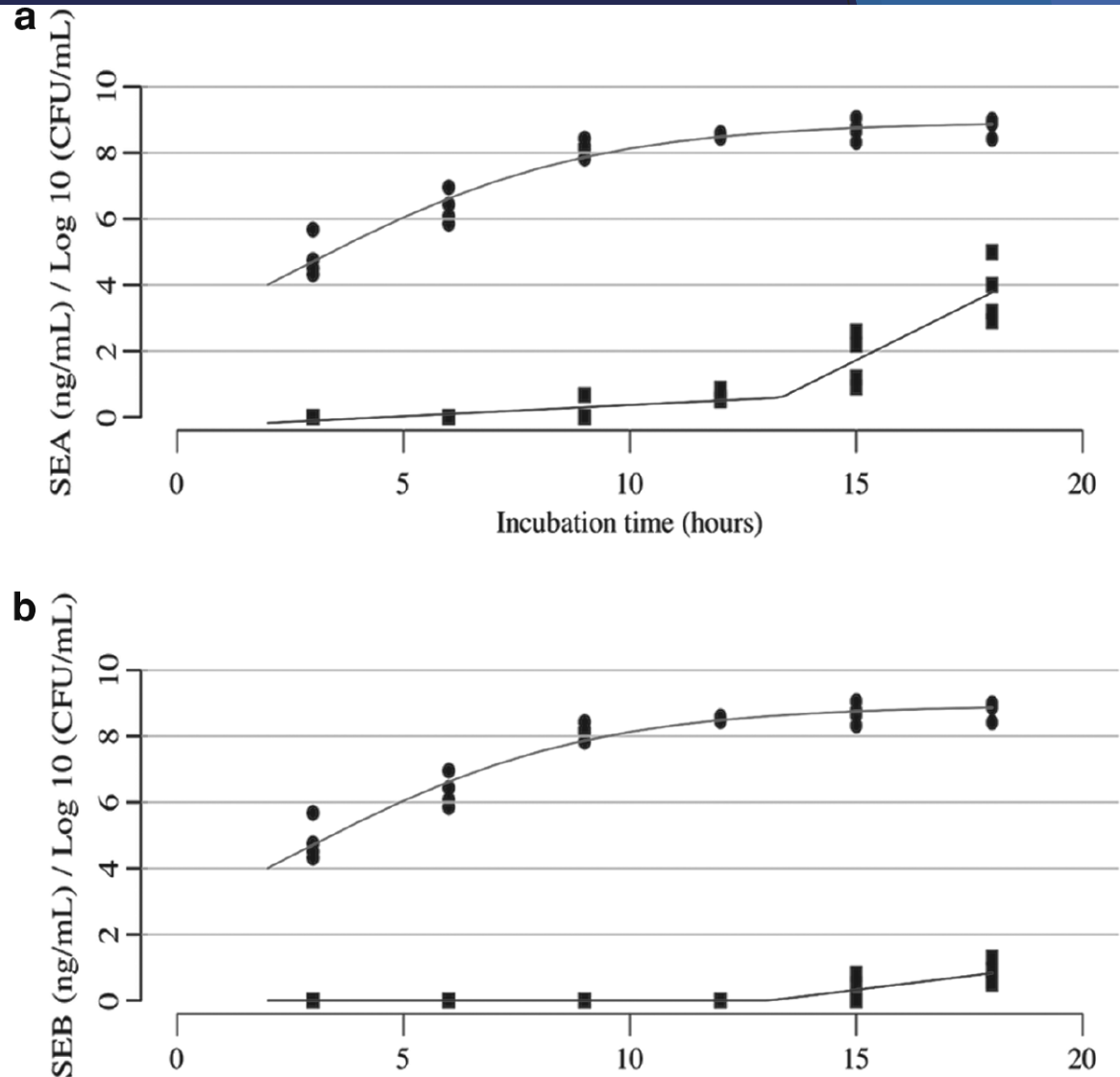


FIG. 2. *S. aureus* growth and staphylococcal enterotoxin production in milk incubated at 37°C. **(a)** The growth of *S. aureus* in pasteurized HM at 37°C (circles) with the logistic growth curve (top). SEA production (squares) with segmented linear regression fit (bottom). **(b)** The growth of *S. aureus* in pasteurized HM at 37°C (circles) with the logistic growth curve (top). SEB production (squares) with segmented linear regression fit (bottom). HM, human milk; SEA, Staphylococcal enterotoxin A; SEB, Staphylococcal enterotoxin B.



Pas de détection de la toxine dans les autres échantillons
uniquement à 37°C

[Fortification of Human Milk for Preterm Infants: Update and Recommendations of the European Milk Bank Association \(EMBA\) Working Group on Human Milk Fortification.](#)

Arslanoglu S, Boquien CY, King C, Lamireau D, Tonetto P, Barnett D, Bertino E, Gaya A, Gebauer C, Grovslien A, Moro GE, Weaver G, Wesolowska AM, Picaud JC.

Front Pediatr. 2019 Mar 22;7:76. doi: 10.3389/fped.2019.00076. eCollection 2019. Review.

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[Recommendations for the Establishment and Operation of Human Milk Banks in Europe: A Consensus Statement From the European Milk Bank Association \(EMBA\).](#)

Weaver G, Bertino E, Gebauer C, Grovslien A, Mileusnic-Milenovic R, Arslanoglu S, Barnett D, Boquien CY, Buffin R, Gaya A, Moro GE, Wesolowska A, Picaud JC.

Front Pediatr. 2019 Mar 4;7:53. doi: 10.3389/fped.2019.00053. eCollection 2019. Review.

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[Processing of Donor Human Milk: Update and Recommendations From the European Milk Bank Association \(EMBA\).](#)

Moro GE, Billeaud C, Rachel B, Calvo J, Cavallarin L, Christen L, Escuder-Vieco D, Gaya A, Lembo D, Wesolowska A, Arslanoglu S, Barnett D, Bertino E, Boquien CY, Gebauer C, Grovslien A, Weaver GA, Picaud JC.

Front Pediatr. 2019 Feb 28;7:49. doi: 10.3389/fped.2019.00049. eCollection 2019.

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