



INFORMATION FOR HEALTHCARE PROFESSIONAL USE ONLY

SCIENCE INSPIRED BY NATURE



# A nutritional comparison of preterm formulas



**IMPORTANT NOTICE:** The World Health Organisation (WHO) has recommended that pregnant women and new mothers be informed on the benefits and superiority of breastfeeding – in particular the fact that it provides the best nutrition and protection from illness for babies. Mothers should be given guidance on the preparation for, and maintenance of, lactation, with special emphasis on the importance of a well-balanced diet both during pregnancy and after delivery. Unnecessary introduction of partial bottle-feeding or other foods and drinks should be discouraged since it will have a negative effect on breastfeeding. Similarly, mothers should be warned of the difficulty of reversing a decision not to breastfeed. Before advising a mother to use an infant formula, she should be advised of the social and financial implications of her decision: for example, if a baby is exclusively bottle-fed, more than one can (400 g) per week will be needed, so the family circumstances and costs should be kept in mind. Mothers should be reminded that breast milk is not only the best, but also the most economical food for babies. If a decision to use an infant formula is taken, it is important to give instructions on correct preparation methods, emphasising that unboiled water, unsterilised bottles or incorrect dilution can all lead to illness. **These products must be used under medical supervision.** SMA® Breast Milk Fortifier is a nutritional supplement designed to be added to expressed breast milk for the dietary management of feeding preterm low birthweight babies. It is not a breast milk substitute. SMA Gold Prem® 1 is a special formula intended for the dietary management of preterm low birthweight babies who are not solely fed breast milk. It is suitable for use as the sole source of nutrition for preterm babies from birth. SMA Gold Prem® 1 is not intended for use with older preterm babies, for whom a special catch-up formula such as SMA Gold Prem® 2 is more appropriate. SMA Gold Prem® 2 is a special catch-up formula intended for the dietary management of preterm low birthweight babies who are not solely fed breast milk. It is a nutritionally complete formula for use on discharge from hospital or when a low birthweight formula is no longer appropriate. It is suitable for use as the sole source of nutrition up to 6 months corrected age. SMA Gold Prem® 2 is not intended for use with newborn preterm babies, for whom fortified breast milk or a low birthweight formula such as SMA Gold Prem® 1 is more appropriate.

SMA Nutrition, 1 City Place, Gatwick, RH6 OPA  
In the Republic of Ireland: SMA Nutrition, 3030 Lake Drive, Citywest Business Campus, Dublin 24, Ireland

Learn more:

	UK 0800 081 81 80 www.smahcp.co.uk
	ROI 1800 931 832 www.smahcp.ie



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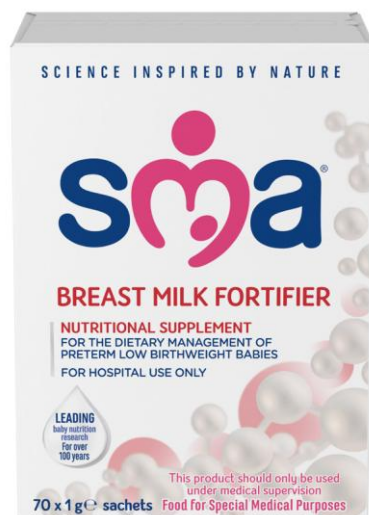
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# The SMA<sup>®</sup> Preterm Range

Food for special medical purposes.



NHS catalogue code (UK): ABT071  
Nestle Supplier code: 12332021



NHS catalogue code (UK): ABT081  
Nestle Supplier code: 12426051



NHS catalogue code (UK): ABC031  
Nestle Supplier code: 12422354



PIP code (UK): 371-0530  
Nestle Supplier code: 12299420



NHS catalogue code (UK): ABC014  
Nestle Supplier code: 12425014

## SMA<sup>®</sup> Breast Milk Fortifier

- ✓ The only breast milk fortifier available in the UK and ROI to contain iron<sup>1,2</sup>
- ✓ 100% whey protein, partially hydrolysed for improved tolerability and adds 1.44 g protein per 100 ml expressed breast milk<sup>1</sup>
- ✓ Contains DHA to help support normal visual and brain development and contains MCTs, an easily absorbed fat and readily available energy source<sup>3,4</sup>

## SMA Gold Prem<sup>®</sup> 1

- ✓ **SUITABLE FOR ALL INFANT < 1.8 Kg** due to compliance with ESPGHAN guidelines on protein for all babies <1.8 kg (3.6 g/100 kcal; 2.9 g/100 ml)<sup>5,6</sup>
- ✓ **PARTIALLY HYDROLYSED PROTEIN** 100% whey, partially hydrolysed protein for improved tolerability<sup>6,7</sup>
- ✓ **IN LINE WITH ESPGHAN GUIDELINES<sup>5,6</sup>** Provision of energy and protein needed for preterm, low birthweight infants in a small volume (80kcal per 100ml)

## SMA Gold Prem<sup>®</sup> 2 (for powder only)

- ✓ **PARTIALLY HYDROLYSED PROTEIN** 100% whey, partially hydrolysed protein for improved tolerability<sup>7,8</sup>
- ✓ **HELPS PROMOTE SOFTER STOOLS<sup>9,10</sup>** due to its SN-2 palmitate fat blend. The only PDF to contain SN-2<sup>8,11</sup>
- ✓ **LOWEST OSMOLALITY<sup>8,11</sup>** of all UK and Ireland post-discharge formulas – 309 mOsmol/kg.

DHA: Docosahexaenoic acid; ESPGHAN: European Society for Paediatric Gastroenterology Hepatology and Nutrition; MCT: Medium-chain triglyceride

# A Nutritional comparison of breast milk fortifiers

## Key differences:

	SMA® BMF <sup>1‡</sup> (per 1 g sachet) <sup>1</sup>	Cow & Gate Nutriprem BMF <sup>2</sup> (per 2.2 g sachet) <sup>2</sup>	
Sachet size	1 g sachet to 25 ml EBM	2.2 g sachet to 50 ml EBM	Smaller sachet size, less waste of EBM
Energy (kcal)	4.3	7.5	
Fat (g)	0.18	0	
of which DHA (mg)	1.6	0	
of which MCTs (%)	~65*	ns	Higher MCTs; easily absorbed fat and readily available energy source
Carbohydrate (g)	0.32	1.35	
Protein (g)	0.36 (partially hydrolysed)	0.55 (extensively hydrolysed)	Partially hydrolysed protein for improved tolerability and adds 1.44 g protein per 100 ml EBM
Whey:casein (%)	100:0	50:50	100% whey protein for improved digestion and tolerability
Calcium (mg)	19	33	
Phosphorus (mg)	11	19	
Vitamin D (µg)	1	2.5	
Iron** (mg)	0.45	0	The only BMF in UK & ROI to contain iron, a micronutrient commonly deficient in preterm babies
Osmolality (mOsmol/kg H <sub>2</sub> O) when dissolved in breast milk	390	450	SMA iron fortified BMF obviates the need to add an iron supplement (a hyperosmolar-inducing intervention), thus keeping the osmolality low

\*~14.5% when mixed with 100 ml expressed breast milk.

\*\*Please note, hospital supplementation guidelines may need to be revised.

<sup>1</sup>Mixed with 25 ml EBM.

<sup>2</sup>Data is correct as per SMA® Nutrition and Cow & Gate datacards (checked against SMA Jan 2020 datacard and Cow & Gate data card accessed Jan 2020).

<sup>3</sup>Salt is calculated as sodium x 2.5. Sodium is present for nutritional purposes.

<sup>4</sup>When added to BM.

BMF: Breast milk fortifier; EBM: Expressed breast milk; MCT: Medium-chain triglyceride; ns: not specified.

There is no strict definition for partially and extensively hydrolysed formula, and protein size is generally used to identify each one. The definition of hydrolysed protein is entirely based on allergy (NOT feeding tolerance).

	Units	SMA® BMF <sup>1‡</sup> (per 1 g sachet)	Cow & Gate BMF <sup>2‡</sup> (per 2.2 g sachet)	Preterm breast milk <sup>12</sup> (per 100 ml)	SMA® BMF 4 x 1 g sachets + preterm breast milk <sup>12</sup> (per 100 ml)	Cow & Gate BMF 2 x 2.2 g sachets + preterm breast milk <sup>12</sup> (per 100 ml)	Mature breast milk <sup>12</sup> (per 100 ml)	SMA® BMF 4 x 1 g sachets + mature breast milk <sup>12</sup> (per 100 ml)	Cow & Gate 2 x 2.2 g sachets + mature breast milk <sup>13</sup> (per 100 ml)
<b>Nutrients</b>									
Energy	kJ	18	32.5	280	352	346	289	361	354
	kcal	4.3	7.5	67	84.2	82	69	86.2	84
Fat	g	0.18	0	3.5	4.22	3.5	4.1	4.82	4.1
Carbohydrate	g	0.32	1.35	7.3	8.58	10	7.2	8.48	9.9
Protein	g	0.36	0.55	1.62	3.06	2.7	1.3	2.74	2.4
Salt <sup>3</sup> (= Sodium x 2.5)	g	0.02	0.05	0.07	0.15	0.16	0.04	0.12	0.14
<b>Omega 3</b>									
α-linolenic acid (ALA)	mg	4.2	ns	30	46.8	ns	ns	≥16.8	ns
Docosahexaenoic acid (DHA)	mg	1.6	0	11.2	17.6	ns	ns	≥6.4	ns
<b>Omega 6</b>									
Linoleic acid (LA)	mg	9.6	ns	480	518.4	ns	ns	≥38.4	ns
<b>Vitamins</b>									
Vitamin A	µg RE	95	116	14.4	394.4	247	58	438	290
Vitamin D	µg	1	2.5	0.2	4.2	5.2	trace	≥4	≥5
Vitamin E	mg	1.1	1.3	0.29	4.69	3	0.34	4.74	2.94
Vitamin K	µg	2.2	3.2	2	10.8	8.4	ns	≥8.8	≥6.4
Vitamin C	mg	5	6	4.4	24.4	16.4	4	24	16
Thiamin	mg	0.04	0.07	0.009	0.169	0.14	0.02	0.18	0.16
Riboflavin	mg	0.05	0.09	0.027	0.227	0.2	0.03	0.23	0.21
Niacin	mg	0.38	1.15	0.21	1.73	2.5	0.2	1.72	2.5
Vitamin B <sub>6</sub>	mg	0.03	0.06	0.006	0.126	0.1	0.01	0.13	0.13
Folic acid	µg	10	15	3.1	43.1	33.1	5	45	35
Vitamin B <sub>12</sub>	µg	0.05	0.1	0.02	0.22	0.2	trace	≥0.2	≥0.2
Biotin	µg	0.9	1.25	0.54	4.14	3.0	0.7	4.3	3.2
Pantothenic acid	mg	0.2	0.4	0.23	1.03	1.0	0.25	1.05	1.05
<b>Minerals</b>									
Sodium	mg	9.2	17.5	28	64.8	63	15	51.8	50
Potassium	mg	12	11.5	50	98	73	58	106	81
Chloride	mg	8	12.5	58	90	83	42	74	67
Calcium	mg	19	33	25	101	91	34	110	100
Phosphorus	mg	11	19	14.5	58.5	52.5	15	59	53
Magnesium	mg	1	2.5	3.3	7.3	8.3	3	7	8
Iron	mg	0.45	0	0.09	1.89	0.09	0.07	1.87	0.07
Zinc	mg	0.24	0.3	0.37	1.33	0.98	0.3	1.26	0.9
Copper	mg	0.01	0.02	0.038	0.078	0.08	0.04	0.08	0.08
Manganese	mg	0.002	0.004	0.0004	0.0084	0.009	trace	≥0.008	≥0.008
Selenium	µg	0.93	0.85	2.4	6.12	4.1	1	4.72	2.7
Iodine	µg	4.2	5.5	17.8	34.6	28.8	7	23.8	18
<b>Others</b>									
Osmolality	mOsmol/kg H <sub>2</sub> O	390 <sup>4</sup>	450 <sup>4</sup>	ns	390	450	ns	ns	ns

# A Nutritional comparison of low birthweight formulas

## Key differences:

	SMA Gold Prem® 1 <sup>6</sup> per 100 ml	Cow & Gate Nutriprem 1 <sup>14</sup> per 100 ml	Cow & Gate Hydrolysed Nutriprem <sup>15</sup> per 100 ml	
Energy (kcal)	80 kcal	80 kcal	80 kcal	
Protein (g)	2.9 g/100 ml 3.6 g/100 kcal 100% whey	2.6 g/100 ml 3.3 g/100 kcal 60:40 w:c	2.6 g/100 ml 3.3 g/100 kcal 60:40 w:c	Higher protein; protein requirements met in lower volumes*
Fat (g)	4 g SN-2 palmitate	3.9 g	4 g	
Hydrolysis	Partially hydrolysed 52% <1000 kDa	Intact protein	Contains extensively hydrolysed protein	Partially hydrolysed protein for easier digestion and better toleration
Osmolality mOsm/kg H <sub>2</sub> O	367	340	410	
Protein:energy (%)	14.5	13	13	
Suitable weights (kg)	<1.8	>1	>1	The only preterm formula that meets ESPGHAN recommendations for all preterm infants <1.8 kg
MCTs (%)	13.5%	8.7%	7.3%	Higher MCTs; easily absorbed fat and readily available energy source

\*140–150 ml/kg will provide optimal daily intake of energy and protein; For infants <1 kg; 150 ml/kg will provide optimal daily intake of energy and protein; For infants 1–1.8 kg.

\*\*Salt is calculated as sodium x 2.5. Sodium is present for nutritional purposes.

†LCPs: Long Chain Polyunsaturates.

‡DFE - Dietary Folate Equivalent: 1 µg DFE = 1 µg food folate = 0,6 µg folic acid from formula.

For information on suitability for use in Halal diets please contact the Careline on 0800 081 81 80

ESPGHAN: European Society for Paediatric Gastroenterology Hepatology and Nutrition;  
MCT: Medium-chain triglyceride; NEC: Necrotising enterocolitis; ns: not supplied.

Nutrients	Units	SMA Gold Prem® 1 <sup>6</sup>		Cow & Gate Nutriprem <sup>14</sup>		Cow & Gate Hydrolysed Nutriprem <sup>15</sup>	
		Per 100 ml	Per 100 kcal	Per 100 ml	Per 100 kcal	Per 100 ml	Per 100 kcal
Energy	kJ kcal	335 80	419 100	335 80	419 100	335 80	419 100
Fat	g	4	5	3.9	4.9	4	5
of which saturates	g	1.6	1.9	1.6	2	1.2	1.5
Carbohydrates	g	8.1	10.2	8.4	10.5	8.4	10.5
of which sugars	g	5.8	7.3	5.4	6.8	5.2	6.5
of which lactose	g	5.7	7.1	5.1	6.4	5	6.3
Protein	g	2.9	3.6	2.7	3.3	2.6	3.3
of which whey	g	2.9	3.6	1.6	2	1.5	1.9
of which casein	g	0	0	1.1	1.3	1.1	1.3
Salt* (= Sodium x 2.5)	g	0.14	0.175	0.16	0.2	0.19	0.24
<b>Omega 3</b>				<b>Omega 3</b>		<b>Omega 3</b>	
α-linolenic acid (ALA)	mg	62	78	ns	ns	ns	ns
Docosahexaenoic acid (DHA) <sup>†</sup>	mg	20	25	20	25	20	25
<b>Omega 6</b>				<b>Omega 6</b>		<b>Omega 6</b>	
Linoleic acid (LA)	mg	732	914	ns	ns	ns	ns
Arachidonic acid (AA) <sup>†</sup>	mg	20	25	20	25	20	25
<b>Vitamins</b>				<b>Vitamins</b>		<b>Vitamins</b>	
Vitamin A	µg	330	412	366	458	366	458
Vitamin D	µg	3.4	4.3	3.1	3.9	3.1	3.9
Vitamin E	mg	3.7	4.6	4.6	5.8	4.6	5.8
Vitamin K	µg	6.3	7.9	6.7	8.3	6.7	8.4
Vitamin C	mg	17	21	18	23	20	25
Thiamin	mg	0.1	0.13	0.14	0.18	0.17	0.21
Riboflavin	mg	0.2	0.25	0.2	0.26	0.21	0.26
Niacin	mg	1.4	1.8	2.4	3	2.4	3
Vitamin B <sub>6</sub>	mg	0.08	0.1	0.12	0.15	0.12	0.15
Folate (DFE) <sup>‡</sup>	µg	65.5	81.8	58	73	58	73
Biotin	µg	4.2	5.3	3.6	4.5	3.6	4.5
<b>Minerals</b>				<b>Minerals</b>		<b>Minerals</b>	
Sodium	mg	56	70	70	88	77	96
Potassium	mg	115	144	81	101	87	109
Chloride	mg	72	89	86	108	78	98
Calcium	mg	119	148	101	126	97	121
Phosphorus	mg	78	98	63	79	54	68
Magnesium	mg	7.5	9.4	7.4	9.2	8	10
Iron	mg	1.63	2.04	1.6	2	1.6	2
Zinc	mg	1.15	1.44	1.1	1.4	1.1	1.3
Copper	mg	0.09	0.11	0.08	0.1	0.08	0.10
Manganese	mg	0.01	0.014	0.006	0.008	0.006	0.008
Selenium	µg	4.8	6	4.5	5.6	4.5	5.6
Iodine	µg	30	37	27	34	27	34
<b>Others</b>				<b>Others</b>		<b>Others</b>	
Taurine	mg	7	8.7	5.5	6.9	5.5	6.9
Choline	mg	22	27	26	33	26	32
Inositol	mg	22	28	24	30	24	30
L-carnitine	mg	3	3.8	2.1	2.6	2.1	2.6
Suitable for vegetarians		No		No		No	
Osmolality	mOsm/kg H <sub>2</sub> O	367		340		410	

# A Nutritional comparison of post discharge formulas

## Key differences for powders:

	SMA Gold Prem® 2 <sup>8</sup> per 100 ml	Cow & Gate Nutriprem 2 <sup>11</sup> per 100 ml
Energy (kcal)	73	72
Fat (g)	3.8	3.8
of which saturates (g)	1.6	1.5
of which SN-2 palmitate (%)	18	ns
Carbohydrate (g)	7.7	7.2
of which lactose (g)	5.3	5.7
Protein (g)	2	2
Whey:casein (%)	100:0	60:40
Hydrolysis	Partially	Intact protein
Iron* (mg)	0.8	1.2
Osmolality (mOsmol/kg H <sub>2</sub> O)	309	320
MCT %	13.2	7.9

100% whey, partially hydrolysed protein for easier digestion and improved tolerability

\*Meets FSMP legislation, but supplementation may be required.

\*\*34% of palmitic acid is esterified to the SN-2 position of the triglyceride.

†DFE - Dietary Folate Equivalent: 1 µg DFE = 1 µg food folate = 0,6 µg folic acid from formula.

‡Salt is calculated as sodium x 2.5. Sodium is present for nutritional purposes.

§LCPs: Long Chain Polyunsaturates.

Data is correct as per SMA Nutrition and Cow and Gate datacards, Jan 2020: For powders, liquids may vary

FSMP: Food for special medical purposes; NEC: Necrotising enterocolitis; ns: not supplied.

Nutrients		SMA Gold Prem® 2 <sup>8</sup>		Cow & Gate Nutriprem 2 <sup>11</sup>	
		Prepared feed	Per 100 kcal	Prepared feed	Per 100 kcal
Energy	kJ	306	419	301	418
	kcal	73	100	72	100
Fat	g	3.8	5.2	3.8	5.3
of which saturates	g	1.6	2.2	1.5	2
of which SN-2 palmitate**	%	18		0	
Carbohydrates	g	7.7	10.5	7.2	10
of which lactose	g	5.3	7.3	5.7	7.9
Protein	g	2	2.8	2	2.7
of which whey	g	2	2.8	1.2	1.6
of which casein	g	-	-	0.8	1.1
Salt† (= Sodium x 2.5)	g	0.09	0.12	0.07	0.09
<b>Omega 3</b>					
α-linolenic acid (ALA)	mg	61	83	ns	ns
Docosahexaenoic acid (DHA)‡	mg	18	25	18	25
<b>Omega 6</b>					
Linoleic acid (LA)	mg	691	947	ns	ns
Arachidonic acid (AA)§	mg	18	25	18	25
<b>Vitamins</b>					
Vitamin A	µg	68	93	100	138
Vitamin D	µg	1.8	2.5	1.8	2.5
Vitamin E	mg	0.9	1.2	2.1	3
Vitamin K	µg	4.3	5.9	5.9	8.2
Vitamin C	mg	17	23	12	17
Thiamin	mg	0.06	0.08	0.09	0.13
Riboflavin	mg	0.16	0.22	0.16	0.22
Niacin	mg	0.53	0.73	1.2	1.6
Vitamin B <sub>6</sub>	mg	0.04	0.06	0.08	0.11
Folate (DFE)††	µg	26	36	52.8	73.3
Vitamin B <sub>12</sub>	µg	0.23	0.31	0.17	0.24
Biotin	µg	1.3	1.7	3.1	4.3
<b>Minerals</b>					
Sodium	mg	36	49	26.5	36.8
Potassium	mg	84	114	75	104
Chloride	mg	55	75	57	80
Calcium	mg	82	112	83	115
Phosphorus	mg	50	69	48	66
Magnesium	mg	6.8	9.3	7.2	10
Iron	mg	0.76	1.0	1.2	1.6
Zinc	mg	0.9	1.2	0.91	1.3
Copper	mg	0.06	0.08	0.06	0.08
Manganese	mg	0.02	0.03	0.005	0.007
Selenium	µg	4.5	6.1	3.2	4.5
Iodine	µg	15	20	22	30
<b>Others</b>					
Taurine	mg	4.3	5.9	4.8	6.7
Choline	mg	24	34	23	31
Inositol	mg	19	27	21	30
L-carnitine	mg	2.9	3.9	2.4	3.3
Suitable for vegetarians		No		No	
Osmolality	mOsmol/kg H <sub>2</sub> O	309		320	

For information on suitability for use in halal diets please contact the careline on 0800 081 81 80

Notes

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References: 1. SMA® Breast Milk Fortifier data card. Available at https://www.smahcp.co.uk/content/media/1684/sma-pro-breast-milk-fortifier-data-card.pdf (accessed September 2018). 2. Cow & Gate Nutriprem Human milk fortifier datacard. Available at https://eln.nutricia.co.uk/product-info/cow-gate-nutriprem-human-milk-fortifier/ (accessed Jan 2020) 3. Lapillonne A. Enteral and parenteral lipid requirements of preterm infants. World Rev Nutr Diet 2014; 110: 82–98. 4. Birch EE et al. Dietary essential fatty acid supply and visual acuity development. Invest Ophthalmol Vis Sci 1992; 33: 3242–3253. 5. Agostoni C et al. Enteral nutrient supply for preterm infants: commentary from the European Society for Paediatric Gastroenterology, Hepatology and Nutrition Committee on Nutrition. J Pediatr Gastroenterol Nutr 2010; 50: 1–9. 6. SMA Gold Prem® 1 data card. Available at https://www.smahcp.co.uk/content/media/1629/ztc1389-final-gold-prem-1-datacard-update.pdf (accessed September 2018). 7. Mihatsch WA et al. Hydrolyzed protein accelerates feeding advancement in very low birth weight infants. Pediatrics 2002; 110(6): 1199–1203. 8. SMA Gold Prem® 2 datacard. https://www.smahcp.co.uk/content/media/1615/final-ztc1409-sma\_gold-prem-2\_datacard\_fa1a\_hr-003.pdf (accessed September2018). 9. Lucas A et al. Randomised controlled trial of a synthetic triglyceride milk formula for preterm infants. Archives of Disease in Childhood 1997; 77: F178–F184. 10. Carnielli VP et al. Feeding premature newborn infants palmitic acid in amounts and stereoisomeric position similar to that of human milk: effects on fat and mineral balance. American Journal of Clinical Nutrition, 1995; 61: 1037-1042. 11. Cow & Gate Nutriprem 2 data card. Available at https://eln.nutricia.co.uk/product-info/cow-gate-nutriprem-2-post-discharge-formula-2/ (accessed Jan 2020) 12. Koletzko B, et al. Nutritional care of Preterm Infants. Scientific Basis and Practical Guidelines, World Rev Nutr Diet, Karger 2014 vol 110:304-305. 13. Food Standards Agency. McCance and Widdowson’s The Composition of Foods (7th summary ed.). Cambridge Royal Society of Chemistry, UK, 2015. 14. Cow & Gate Nutriprem 1 data card. Available at https://eln.nutricia.co.uk/product-info/cow-gate-nutriprem-1-low-birthweight-formula-2/ (accessed Jan 2020). 15. Cow & Gate Nutriprem Hy data card. Available at https://eln.nutricia.co.uk/product-info/cow-gate-hydrolysed-nutriprem-2/ (accessed Dec 2020).