

## KITTEN NUTRITION & HAND REARING

### COLOSTRUM

Success in hand rearing kittens greatly improves if they receive colostrum at birth. Colostrum is the first milk produced by the queen, and has high levels of immunoglobulins. These are proteins that provide immunity to infection by microorganisms such as bacteria or viruses. Kittens are born virtually devoid of immunity and must acquire their initial immune protection from colostrum. Kittens that don't receive adequate colostrum (eg due to orphaning) have a weakened immune system and an increased risk of disease, particularly in the first four weeks of life. Colostrum is only produced for a short time after birth, and studies indicate that intestinal closure to the absorption of immunoglobulins may occur as early as 16-24 hours after birth in kittens<sup>1</sup>.

If kittens don't receive colostrum from the queen then they can be fed with **Impact Colostrum Supplement**. Impact is made from bovine colostrum powder which contains intact immunoglobulins (IgG, IgA) as well as other antimicrobial proteins such as lactoferrin. Bovine colostrum has been shown to be effective against a wide range of common pathogens (e.g. rotavirus, *E. coli*) known to cause acute diarrhoea and enteric disease in kittens<sup>2</sup>. Cats supplemented with bovine lactoferrin have demonstrated an improved immune response to feline immunodeficiency virus (FIV) and feline herpesvirus (FHV-1)<sup>3,4</sup>. Supplementing with colostrum may particularly be beneficial in newborn kittens removed from their mothers due to incompatible blood types (feline neonatal isoerythrolysis).

**Impact** should be fed as soon as possible after birth, and preferably before milk formula is fed.

**First 12 hours after birth:** Prepare a daily dose of Impact and feed ¼ of the amount every 2 hours. Do not feed milk formula during this time, as this can reduce the ability to absorb the immunoglobulins from the intestine.

**12 to 48 hours after birth:** Commence feeding milk formula every 4 hours. Prepare a daily dose of Impact and feed ¼ of the amount, mid way between milk feeds. Do not mix or feed Impact with milk formula.



### MILK FORMULA

Different species of mammals produce milks of different composition in order to satisfy the nutritional requirements of their growing young<sup>5</sup>. The table below shows the difference in composition between the milks of cows, cats and some commercial milk replacers.

	Solids (g/litre)	% Protein	% Fat	% Carbohydrate	Taurine (mg/litre)	Energy (kJ/litre)
Cow's Milk <sup>5</sup>	127	27	29	38	8.3	2700
Cat's Milk <sup>6</sup>	205	41	29	23	359	4400
Wombaroo Cat™	215	43	27	20	500	4500
Divetelact™	200	24	30	37	60	4200
Biolac Pink™	170	30	30	30	25*	3700
Animalac™	175	30	11	49	25*	3100

\*Estimated values, since taurine is not an added ingredient in these products.

Cat milk contains relatively high levels of protein, with only moderate amounts of carbohydrate. Around 50% of the protein in cat's milk is in the form of readily digestible whey protein, compared to cow's milk which is about 80% curd-forming casein. The high amount of carbohydrate (mainly lactose) and low protein content of cow's milk make it unsuitable for hand rearing kittens. Cat milk also contains high quantities of the sulphonic acid taurine. Taurine is an essential nutrient for the growth and development of healthy kittens. Studies have shown that a deficiency of taurine can lead to a range of serious problems including reduced growth rates, blindness and heart failure<sup>7</sup>.

Comparing the commercial formulas listed, **Wombaroo Cat Milk Replacer** has the most similar nutritional composition to that of cat's milk. All other products are deficient in either protein or energy when compared to mother's milk. Low dietary protein and energy intake are likely to lead to long-term developmental problems in kittens. Critically, only **Wombaroo** has sufficient taurine levels (exceeding nutritional guidelines<sup>8</sup>) to promote the healthy growth and development of kittens.

# WOMBAROO

## KITTEN NUTRITION & HAND REARING

### USING CAT MILK REPLACER

To make 30mL of milk: mix 1 level scoop of powder (6.5g) with 25mL of pre-boiled warm water.  
To make one litre of milk: mix 215g of powder with 850mL of pre-boiled warm water.

Add half the water to the powder first and mix to a paste. Then add the remaining water and mix thoroughly. Pre-boil the water to ensure it is sterilised. If the water is too hot it can cause the milk to curdle. If it is too cold then it will be difficult to mix the powder. Wombaroo contains elevated protein levels, so the milk needs to be well mixed to prevent it from separating out. An electric whisk can be used for mixing larger quantities. Milk can be stored in the fridge for up to a day or can be frozen for up to 2 weeks. It is useful to make milk up in larger volumes, and store it frozen in small portions (eg ice cube trays), so that the required feed volumes can be easily thawed out. Once thawed out, discard any unused milk, and wash feeding utensils thoroughly.

**FEEDING:** Warm milk to about 35°C. Feed from a bottle with teat, a **Wombaroo C** teat is recommended. In emergency cases tube feeding may be required, but this should be performed under veterinary guidance. Feed every 2 hours for the first 3 days, reducing this to every 4 hours by week one and every 6 hours by week two. Stimulate kittens to defecate and urinate after each feed. Encourage kittens to lap once their eyes are open and voluntary bowel motions begin. To avoid dehydration give kittens a drink of pre-boiled water between feeds, particularly in hot weather. Always offer kittens drinking water once their eyes are open and they become active. Consult your veterinarian or breeder for particular advice about caring for your breed of kitten.

**GROWTH:** Kitten body weight should increase by about 10-15g per day. It is important to weigh kittens regularly to verify weight gains and determine if the correct volume of milk is being fed. Overfeeding milk can cause diarrhoea so feed the suggested volumes for the weight of the kitten, as listed on the pack.

**WEANING:** Kittens should begin to show interest in solid food at about four weeks of age. Start by offering a small portion of dried kitten food soaked in milk. Continue to increase the solids and reduce milk intake until they are fully weaned at about eight weeks.



### REFERENCES

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