

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 after birth. It is high in protein, much of which is immunoglobulins¹. These are a group of proteins with antibody activity that are produced in response to infection by micro-organisms such as bacteria or viruses. Kittens are born devoid of immunity and must acquire their initial antibodies from colostrum. Kittens that don't receive colostrum have a weakened immune system and an increased risk of infection and disease.

Colostrum is only produced for a short time after birth. Within 48 hours the composition of the queen's mammary secretion changes from colostrum to normal milk. After this time the kittens are no longer able to absorb antibodies from the intestine².

If kittens don't receive colostrum from the queen then they can be fed with **Impact Colostrum Supplement**. **Impact** is made from colostrum powder and contains whey protein, omega-3 & 6 fatty acids, vitamins & minerals. These are all essential nutrients for the growth and development of healthy kittens.

Impact should be fed as soon as possible after birth, and preferably before milk formula is fed. The feed rate of **Impact** is based on the body weight of the kittens as per the info sheet provided with the product.

First 12 hours ▶ Prepare a daily dose of **Impact** and feed $\frac{1}{4}$ of the amount every 2 hours. Do not feed milk formula during this time, as this can affect the ability to absorb the antibodies from the intestine.

Next 36 hours ▶ Commence feeding milk formula every 4 hours. Prepare a daily dose of **Impact** and feed $\frac{1}{4}$ of the amount, mid way between milk feeds. Do not mix or feed **Impact** with milk formula.

After two days, colostrum can stop being fed, and kittens go solely onto milk formula right through until weaning.

MILK FORMULA

Different species of mammals produce milks of vastly different composition in order to satisfy the nutritional requirements of their growing young. The table below shows the difference in composition between the milks of some common domestic species^{3,4}.

	Solids (g/litre)	% Protein	% Fat	% Carbohydrate (lactose)	Energy (kJ/litre)
Cow	127	26	30	38	2800
Goat	130	27	32	34	2900
Cat	195	42	25	26	4100
Dog	220	33	44	16	5400

Cat milk is characterised by having relatively high protein levels with only moderate amounts of carbohydrate (lactose) and fat. In addition, the nature of the protein in cat's milk is higher in the readily digestible whey proteins, compared to cow's milk which is predominantly caseins. Clearly the high amount of lactose and lower protein content of cow's milk make it an unsuitable substitute for cats's milk. In addition cat milk contains relatively large quantities of the sulphonic acid taurine (approx 359 mg/litre according to NRC guidelines⁵). Taurine is an essential nutrient for the growth and development of healthy kittens, and must be present in the milk to avoid deficiencies. A taurine deficient diet can lead to blindness, hair loss, tooth decay and heart failure^{6,7}.

If a queen is unable to supply adequate quantities of milk, or kittens are orphaned, then they can be reared on **Wombaroo Cat Milk Replacer**. **Wombaroo** is specifically designed to match the composition of cat's milk and contains all the essential nutrients for the growth and development of healthy kittens. The table below shows the difference in composition between some of the brands of milk replacers commonly used to rear kittens.

	Solids (g/litre)	% Protein	% Fat	% Carbohydrate (lactose)	Taurine (mg/litre)	Energy (kJ/litre)
Wombaroo Cat	215	40	29	19	500	4500
Di-Vetelact	188	24	29	41	60	4100
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.

WOMBAROO

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MILK FORMULA (CONT)

Wombaroo contains the elevated protein levels and correct composition to supply kittens with the nutrition they need. All the other products are deficient in protein, which can lead to retarded growth rates. People try to counter this by feeding these products at higher rates, but this often leads to diarrhoea and intestinal upset. Critically, only **Wombaroo** has sufficient taurine levels (exceeding NRC guidelines⁵) to ensure healthy growth and development of kittens.

Wombaroo also contains the fatty acids Linoleic acid and Arachidonic acid, which have also been shown to be essential components of a cat's diet ^{5,8}.

HAND REARING

Making up Milk ▶ To make 1 litre of **Wombaroo** milk add 215g of powder to 400ml of preboiled warm water. Mix to a paste then make up to 1 litre with more water and mix thoroughly. Water is preboiled 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 disperse 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. 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 store frozen milk in small portions (eg ice cube trays), so that the required daily 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" type teat is recommended. In emergency cases tube feeding may be required. Feed every 2 hours for the first 3 days, reducing this to every 4 hours by the end of the first week. During the second week reduce feeding to 6 hourly intervals. Refer to feed rates on the pack. 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 during periods of hot weather give kittens a drink of pre-boiled water between feeds. Always offer kittens drinking water once their eyes are open and they become mobile. Consult your veterinarian or breeder for particular advice about caring for your breed of kitten.

GROWTH ▶ Kitten body weight should increase by about 10-15 g per day. It is important to weigh kittens regularly to verify weight gains and determine the volume of milk to feed. Overfeeding milk can cause diarrhoea so feed the suggested volumes in our tables.

WEANING ▶ When kittens are about 4 weeks old they should show interest in solid food. To entice them to eat solids offer a small portion of specially formulated kitten dry food soaked in **Wombaroo**. Once they start to eat solid food continue to increase the solids and reduce the milk in their diet until they are fully weaned at about 8 weeks.

REFERENCES

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