

PUPPY NUTRITION & HAND REARING

COLOSTRUM

Success in hand rearing puppies greatly improves if they receive colostrum at birth.

Colostrum is the first milk produced by the bitch after birth. It is high in protein, much of which is immunoglobulins. These are a group of proteins with antibody activity that are produced in response to infection by micro-organisms such as bacteria or viruses. Puppies are born devoid of immunity and must acquire their initial antibodies from colostrum¹. Puppies 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 bitch's mammary secretion changes from colostrum to normal milk. After this time the puppies are no longer able to absorb antibodies from the intestine².

If puppies don't receive colostrum from the bitch 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 puppies.

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 puppies 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 puppies 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

Dog milk is characterised by a relatively high concentration of solids (g/l), elevated fat levels and low amounts of carbohydrate. This results in a milk with close to twice the energy level per litre than that of ordinary cow's milk. Clearly the high amount of lactose and low energy value of cow's milk make it an unsuitable substitute for dog's milk.

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

	Solids (g/litre)	% Protein	% Fat	% Carbohydrate	Energy (kJ/litre)
Wombaroo Dog	215	35	42	15	5100
Di-Vetelact	188	24	29	41	4100
Biolac Blue	200	31	31	30	4400
Animalac	175	30	11	49	3100

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MILK FORMULA (CONT)

Wombaroo contains the elevated energy levels and correct composition to supply growing puppies with the nutrition they need. All the other products listed are deficient in protein, fat and energy, 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. The other products also contain excessive carbohydrate which can lead to intestinal upset in puppies. Additionally the type of fats present in the milk are important, with puppies requiring elevated levels of omega 3 & 6 fatty acids for optimum development⁶. **Wombaroo** contains added essential fatty acids including EPA, DHA (omega-3) and Linoleic Acid (omega-6) in quantities exceeding the NRC guidelines⁵.

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 fat 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** “SD” or “LD” type teat is recommended for small and large breeds respectively. 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 puppies to defecate and urinate after each feed. Encourage puppies to lap once their eyes are open and voluntary bowel motions begin. To avoid dehydration during periods of hot weather give puppies a drink of pre-boiled water between feeds. Always offer puppies 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 puppy.

GROWTH ▶ Different breeds of puppies have different growth rates. Carers should contact their veterinarian or breeder for information about the growth rate of their particular breed. It is important to weigh puppies 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 puppies are about 4 weeks old they should show interest in solid food. To entice them to eat solids offer a small portion of puppy kibble 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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