

WOMBAROO

CRIA NUTRITION & HAND REARING

COLOSTRUM



Success in hand rearing young camelids (cria) greatly improves if they receive colostrum at birth. Colostrum is the first milk produced by the dam after birth. It is high in protein, much of which is immunoglobulin. These are proteins which provide immunity against pathogens such as bacteria and viruses. Cria are born devoid of immunity and must acquire their initial immunoglobulins from colostrum. Cria that don't receive colostrum have a weakened immune system and increased risk of infection and mortality^{1,2}.

Colostrum is only produced for a short time after birth. After about 48 hours the composition of the dam's mammary secretion has changed from colostrum to normal milk. After this time, intestinal closure to the absorption of immunoglobulins occurs¹.

If cria don't receive colostrum from the dam, they can be supplemented with **Impact Colostrum Supplement**.

Impact is made from bovine colostrum powder and contains high levels of immunoglobulins and antibacterials that may provide immunity and intestinal protection to young animals. Bovine colostrum is useful in providing immunity as it is effective against many of the pathogens found in soil and on pasture to which cria are exposed.

Impact should be fed as soon as possible after birth, and preferably before milk formula is fed. Cria should receive 2 daily doses of **Impact** within the first 48 hours of life. A daily dose is 60g of **Impact Powder** mixed with 190mL of warm water, which makes approximately 240mL of liquid colostrum.

First 12 hours ▶ Prepare a daily dose of **Impact** (240mL) and feed about 60mL every 2 hours. Do not feed milk formula during this time, as this can affect the ability to absorb the immunoglobulin molecules from the intestine.

Next 36 hours ▶ Commence feeding milk formula from about 12 hours of age. Prepare a daily dose of **Impact** (240mL) and feed about 60mL every 4 hours, mid-way between milk feeds. Do not mix or feed **Impact** with milk formula.

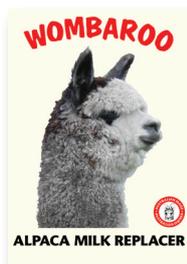
After two days, colostrum can stop being fed, and cria are fed **Alpaca Milk Replacer** right through until weaning.

MILK FORMULA

Different species produce milks of 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.^{3,4,5}

	Solids g/litre	% Protein	% Fat	% Carbohydrate (lactose)	Energy (MJ/litre)	Protein to Energy Ratio (g/MJ)
Cow	127	26	30	38	2.8	12
Goat	130	27	32	34	2.9	12
Alpaca*	163	41	20	30	3.1	22
Sheep	193	29	38	25	4.5	12

*Llama milk composition is reasonably similar to that of alpaca.



Alpaca milk contains elevated protein levels and relatively low amounts of fat³. This results in a milk with almost twice the protein to energy ratio compared to that of other ruminant species. The high protein content is specifically required to sustain the rapid growth rate of cria, without depositing excessive body fat. The protein in Alpaca milk is high in sulphur-containing amino acids (eg cysteine) which is essential for good fleece condition. Animals maintained on a lower protein milk (eg Cow or Goats milk) are likely to have a reduced growth rate compared to mother-reared cria and may need to be weaned later. Conversely, feeding a high fat, high energy milk (eg Sheep's milk) may lead to excessive weight gain and problems with skeletal development.

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

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MILK FORMULA (CONT)

	Solids (g/litre)	% Protein	% Fat	% Carbohydrate	ME (MJ/litre)	Protein/Energy Ratio (g/MJ)
Wombaroo Alpaca	170	35	16	32	3.1	20
Di-Vetelact	135	24	30	37	2.8	12
Profelac Shepherd	180	25	30	30	3.7	12

Wombaroo Alpaca Milk contains the elevated protein levels and optimum energy content to supply growing cria with the nutrition they need. Products not specifically made for alpacas (eg Di-Vetelact, Profelac or other calf or lamb products) and are usually deficient in protein, but contain excessive fat content for cria. This results in an inadequate protein/energy ratio in the milk which may lead to poorer growth rates and later weaning than Wombaroo-reared cria.

HAND REARING

Making up Milk ▶ To make 1 litre of **Wombaroo Alpaca Milk Replacer** add 170g of powder to 850ml of preboiled warm water. Add about 400mL of the water to the powder first and mix to a paste. Then make up to a litre with the remaining water and mix thoroughly. Other volumes of milk can be made by scaling up or down the above quantities. 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. 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 two weeks.

FEEDING ▶ Warm milk to about 35°C. Feed from a bottle with teat, with the bottle held vertically to simulate suckling from the mother's udder. This posture allows passage of the milk to directly enter the 3rd stomach compartment where milk digestion occurs. Feed every 2 hours for the first 4 days, reducing this to every 4 hours by the end of the first week. During the third week reduce feeding to 6 hourly intervals. Feed according to body weight, as per the directions on the pack. Feeding milk via a teat is preferred over bucket-feeding as this avoids milk from entering the 1st stomach compartment and fermenting. Avoid dehydration during periods of hot weather by giving cria a drink of pre-boiled water between feeds. Animals drink water when thirsty so always have clean drinking water available. Consult your veterinarian or breeder for particular advice about cria husbandry.

GROWTH ▶ Depending on its sex, alpaca cria should weigh from 6 to 9kg at birth and double their body weight by 4 weeks of age. After this they should grow at a rate of 200g to 300g per day until weaning (figures are higher for llama cria). Where possible, weigh cria 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 ▶ Mother-reared cria are usually weaned at 6 to 9 months of age. However it is usually impractical to hand-rear a cria for this amount of time so many owners will want to begin weaning as soon as possible. We would advise feeding milk for at least 3 months (approximately 25kg body weight), requiring about 75 litres of Wombaroo for the average alpaca. Cria can be offered high quality, digestible creep feed and hay from 7-10 days of age. This starts the development of microbial digestion in the 1st stomach compartment. Once they start to eat sufficient quantity of solid food reduce the milk and increase the solids until they are fully weaned.

REFERENCES

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3. Oftedal, O.T. & Iverson, S.J. (1995). Comparative analysis of non-human milks. *Handbook of Milk Composition*. Ed Jensen, R.G., Academic Press, New York.
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