Nutrition of the orphan foal

When hand-rearing a foal, the number one priority should be its long term welfare. Providing nutrition that closely mirrors what would be received from its mother’s milk is essential.

Composition of horse milk

After providing colostrum, the mare starts to produce normal milk to nourish her foal. Horse milk is unique in composition, as can be seen by the comparison with cow’s milk in the table below:

<table>
<thead>
<tr>
<th>Solids (grams/litre)</th>
<th>Horse</th>
<th>Cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (kilojoules/litre)</td>
<td>2000</td>
<td>2800</td>
</tr>
<tr>
<td>Carbohydrate %</td>
<td>57</td>
<td>38</td>
</tr>
<tr>
<td>Protein %</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>Fat %</td>
<td>14</td>
<td>30</td>
</tr>
</tbody>
</table>

Horse milk is relatively dilute, with a low solids and energy content compared to cow’s milk. This allows for a controlled growth rate of the foal, without putting excess body weight on too quickly. This is important because normally a foal’s height increases faster than bodyweight and, therefore, proper nutrition is essential during this rapid bone growth phase. For example, at one year of age foals reach about 90% of their adult height, but only about 60-75% of their final adult weight. An excessively rapid weight gain (from too high an energy milk) may be responsible for an increased incidence of skeletal problems in young foals.

Carbohydrates provide the majority of energy in horse milk. The carbohydrate is mainly lactose, which is readily digested by intestinal enzymes in the foal.

Protein supports growth and development of the foal. The protein consists of about 50% whey protein compared to cow’s milk, which only has around 20%. Whey protein has a high biological value for growing foals due to its elevated quantities of essential amino acids (particularly lysine and threonine). Cow’s milk or similar products (e.g. skim milk powder) are, therefore, not an ideal substitute for foals, because they do not contain the whey protein profile of natural mare’s milk.

Fat is utilised as an energy source, but the quantity is limited, which helps restrict excessive weight gain. Fatty acids are also used for cell wall structure and brain development. The fat content of horse milk is vastly different to that of ruminants, such as cows and goats. For example, horse milk is particularly high in the omega 3 and 6 fatty acids (20% alpha-linolenic acid). The fat from cows or goats milk contain much lower levels of these fatty acids and, therefore, are not ideal for young foals.

From time to time, breeders are faced with orphaned foals or mares producing limited milk supply. In many cases, it may be possible to foster out an orphan foal to a surrogate mare. If this is not practical, then a suitable horse milk replacer should be fed to provide optimum nutrition.

Colostrum

Success in hand-rearing foals greatly improves if they receive colostrum at birth. Colostrum is the first milk produced by the mare and is high in immunoglobulins (proteins produced in response to infection by micro-organisms). Foals are born devoid of immunity, so they must acquire their initial immunoglobulins from colostrum in order to fight infections.

Colostrum can only be absorbed for a short time after birth. It is, therefore, recommended to supply colostrum to young foals within 36 hours of birth if they have not received sufficient quantities from the mare. Studs often keep frozen colostrum on hand for such emergencies.

Otherwise, powdered bovine colostrum can be used to provide a level of passive immunity to foals.
Feed volumes

The amount to feed depends on the energy requirement of the foal and this is calculated based on the metabolic rate of the animal. It is important to note that energy usage of an animal is not linear with body weight (e.g., a 100kg foal does not need twice the milk intake of a 50kg foal).

Therefore, a simple rule of thumb like “feed 10% of body weight per day” does not apply, as this may be insufficient for young foals and excessive for older ones.

Hand-rearing

Foals should be housed in a clean, draught-free environment and have access to a grazing paddock and fresh drinking water.

Milk should be warmed to about 30°C and fed every two hours for the first week; reducing this to every four hours by the end of the second week. After one month, reduce feeding frequency to every six hours. Foals may be initially fed from a bottle and teat. However, they quickly learn to drink from a bucket.

Table 2. Feed Volumes

<table>
<thead>
<tr>
<th>Foal Weight</th>
<th>Age (approx)</th>
<th>Feed Volume</th>
<th>% of body weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 kg</td>
<td>Birth</td>
<td>6 litres/day</td>
<td>12%</td>
</tr>
<tr>
<td>100 kg</td>
<td>32 days</td>
<td>10 litres/day</td>
<td>10%</td>
</tr>
<tr>
<td>150 kg</td>
<td>72 days</td>
<td>13.5 litres/day</td>
<td>9%</td>
</tr>
</tbody>
</table>

Table 2. Feed Volumes

During the hand-rearing period body weight should increase by around 1.5kg per day. Typical foal growth charts and feed guidelines can be obtained from manufacturers of milk replacer products. Over-feeding can cause diarrhoea, so large deviations from the suggested feed volumes are not advised.

When the foal is about two months old it should begin to show interest in solid food. Introduce a commercial starter feed into the diet and slowly reduce the volume of milk replacer fed. At this time the foal should be exercised in a paddock and have access to both hay and pasture. Carers tend to wean foals quickly, but ideally, they should not be weaned before six months.

Summary

- Success in hand rearing foals is greatly enhanced if they receive colostrum at birth
- A quality Horse Milk Replacer should closely resemble mare’s milk and be high in lactose, with moderate protein levels, & low fat content.
- Horse milk replacers should have a high whey protein fraction, and the fat should contain elevated levels of omega-3 & 6 fatty acids, in particular alpha-linolenic acid.
- Volumes should be fed according to metabolic energy requirements (based on body weight) for optimum weight gain.
- Proper nutrition is essential during this time as skeletal deformities can occur if bone elongation is interfered with by excessive weight gains.

WOMBAROO

FOAL REARING

PRODUCTS

HORSE MILK REPLACER

- Formulated to closely resemble mare’s milk.
- High in whey protein an α-linolenic acid (omega-3)

IMPACT

- Food supplement for newborn foals.
- Contains colostrum powder, essential vitamins & minerals.

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