Calf milk replacers

Price differences in milk replacers can be due to differences in ingredients, manufacturing technology and nutritional quality. It is important that producers understand these differences and make informed decisions.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>• Reduces risk of disease transfer (eg Johne’s disease and BVD)</td>
<td>• Lower energy (due to fat content) compared to whole milk</td>
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<td>• Consistency of product, when mixed correctly – less risk of digestive upsets and scour.</td>
<td>• Products with plant-based proteins have a lower digestibility in calves under three weeks old.</td>
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**Understanding the label**

It is difficult to assess milk replacer quality from the label. The only legal requirement is that ingredients are listed in descending order of inclusion. Generally, higher quality ingredients are more expensive.

**Analysis**

The constituents usually listed are crude protein, crude fat, crude fibre, ash and sometimes moisture. Milk replacer should contain 20–26% crude protein and 16–20% fat to achieve optimal growth rate in early life.

**Protein**

Protein is necessary for tissue growth. Protein sources in milk replacer can be milk based (eg dried skimmed milk, dried whey, delactosed whey, caesin), egg based or plant based (eg soya, wheat gluten, pea).

Calves are better able to digest powders with milk-based proteins, particularly those less than three weeks of age.

**Skim and whey milk proteins**

Skim milk-based powders are typically around 80% casein and 20% whey, the casein forms a clot in the abomasum and is digested like whole milk. Whey-based powders are digested in the small intestine and do not form a clot in the abomasum due to the absence of casein.

Traditionally, it was thought that milk replacers which did not form a clot were inferior and responsible for scour in young calves. Recent research does not support this and suggests that poor performance of calves on some milk replacers is more to do with the ingredients and the age of the calf.

**Oil and fat**

Generally, vegetable fats (palm oil, coconut or soybean) have similar digestibility to milk fat in calves over two weeks old.

For calves under two weeks of age, vegetable fats may increase the risk of scour.
Fibre

Fibre is an indicator of protein quality.
- Products with less than 0.15% fibre contain milk or egg
- Fibre levels over 0.20% indicate inclusion of plant proteins.

The ingredient list should be viewed to determine the protein sources.

Ash

Ash indicates the overall level of minerals.
- The ash content should not be higher than 8%.

Vitamin and mineral

Declared minerals generally vary very little between milk replacers and do not usually warrant routine inspection.

Other considerations

- Reconstitute milk replacer at the concentration required to achieve targeted growth rates
- Consistency is the key
- Always read the label and mix to the manufacturer’s directions
- Feeding 6 litres per day up to 150g /l during normal environmental conditions is recommended
- Only use reputable products otherwise calves may experience health problems and poor growth rates

Moisture

It is not always clear if the analysis is on a dry matter or fresh weight basis.
- If moisture is reported, the analysis is on a fresh weight basis
- If moisture is not reported, ask the manufacturer whether or not protein, fat, fibre and ash are on a dry matter or fresh weight basis
- If analysis is on a fresh weight basis and moisture content is not stated, then assume 5% moisture.

Example of a milk replacer label

AHDB Dairy has a film on best practice hygiene in the calf shed.

AHDB Dairy is a division of the Agriculture and Horticulture Development Board

For more information on calf management, please visit the web: dairy.ahdb.org.uk/calves

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