



Transition from CMR to starter feed

Making the puzzle right from the start

How long do you have to keep feeding Calf Milk Replacer? When can you start with starter feed? How long should you give both? A successful transition from CMR to starter feed depends on the physiological development of the calf and specifically on the development of the rumen. In this article we present some more background on this development.

Milk is the most important for a pseudo monogastric calf in the first weeks of live. It's important to develop the rumen since this is the most important stomach of the multi-stomach functioning ruminant the calf will become. Development of the rumen is stimulated by the intake of calf starter, water, and roughage.

However, age and the amount of milk or calf milk replacer (CMR) intake also influence the rumen development. Plasma concentrations of hormones and growth factors influence the proliferation of the rumen epithelial cells and are affected by the liquid diet.

Abomasum and rumen development

At birth, the gastrointestinal tract is sterile and undeveloped, the only developed

stomach is the abomasum. At birth, the abomasum makes up 50-60% of the total fore stomach weight, where the rumen only accounts for 25%. At around 8 weeks of ages this ratio is turned around and at 12-16 weeks the total weight exist for nearly 70% of rumen and only 15% of abomasum.

The rumen is key for fermentation and digestion of the forage diet of the functioning ruminant, and needs to be developed first. Therefore the pseudo monogastric calf is depended in the first weeks of live on the feed digestion within the abomasum and intestinal tract; a liquid milk-based diet.

The gastro-intestinal tract is colonized rapidly from birth onwards, with bacteria

derived from the dam (vagina and teat), contact with other calves, environment, and air. Hygiene within the calving area and early feeding is therefore important to avoid ingestion of pathogenic bacteria and stimulate colonisation of the desired bacteria for gastro-intestinal tract microbiota development and reduction of diarrhoea incidence.

Strategic choice

Nowadays we see different calf rearing methods. In the more classical approach the focus is on stimulating soon and quick starter intake, combined with a more conventional milk feeding program.

Another approach is to focus on maximal growth and development of the

calf, following the more natural milk and starter intake and thereby rumen development. This means there is a higher level and longer period of milk feeding whereby the start of calf starter intake and thus rumen development is more gradual.

High or low milk intake levels?

An increased milk intake level (1150 g/day) results in a more gradually and more complete developed rumen, showing longer rumen papillae enlarging the surface area for absorption and VFA metabolism.



A low milk intake (450g/day), stimulates a large amount of starter intake, resulting in a dark coloured rumen with short papillae. Excessive amounts of rapidly fermented starter are predisposed by the calves to rumen acidosis, inducing a low ruminal pH leading to a decrease in rumen function.

Growth and development depend on the intake

A bit of roughage is good

in spite of its low nutritional value, roughage is important for rumen development and is associated with positive effects on rumination, salivation and the increase in ruminal pH. A structure roughage in the form of chopped hay

or strow is advised to feed during and until at least 2 weeks after the milk fed period. A little amount (around 5-8% in a starter mixture) is enough, working like a tooth strow removing dirt and plaque formation from the rumen wall. Roughage should be offered in small

amount to not compromise the nutritive value of the starter feed. Lately more and more mixed feeds with starter and chopped strow are offered in the markets but making your own mix on farm with a high protein starter is also possible.

Introduction of grass and corn

From 2 weeks after weaning or an age of around 3 months roughage in the form of grass silage and corn silage can be introduced, still together with the high-quality starter or mixture of starter and chopped straw. Intakes and nutrient intakes from the newly introduced roughage are still low. A nutrient dense

But intake determines and supports growth and development

starter is needed to fulfil the nutrient needs of the calves after weaning. In the months after weaning intake of forage will increase, and the rumen will adapt, gradually the dense starter can be reduced.

On the one hand growth and development are dependent on the intake of feed. On the other hand intake will determine and support the way and rate of development and thereby growth. That development and growth in the first months will determine the productivity and longevity of your herd.

Underlining the importance of making the puzzle right from the start!

