

XTRACT®

A SUITABLE TOOL TO SUPPORT PRE-WEANING CHALLENGES IN CALVES

In cattle farming, pre-weaning is a critical phase. During the first months of their life, young calves are prone to numerous stresses and challenges. Risks are increased by the fact that their digestive system is not fully developed and immune system still immature.

In conventional farming systems, two types of calves have to undergo this challenging period: Veal Calves (VC) and Replacement Calves (RC). The first type is reared to produce veal meat and the second type is destined to become either a milking cow or a young bull. Breeding and feeding practices are slightly different between the two types of animal.

The first objective of this article is to state the breeding management differences and similarities between the VC and the RC. The second objective is to explain how XTRACT® 6930 and its water soluble version: XTRACT® Instant, two products consisting of a blend of carvacrol, capsicum oleoresin and cinnamaldehyde are suitable tools for supporting both types of calves in facing the pre-weaning challenge.

Veal calf and replacement calf breeding practices

Veal calves are commonly raised for 5 months to reach the desired body weight (around 220 kg) as fast as possible. The key breeding parameters are breeding time, Body Weight Gain (BWG) and Feed Conversion Ratio (FCR).

In order to achieve these targets VC are commonly fed with Milk Replacer (MR) and a little bit of roughage is provided. The milk replacer is provided once or twice a day. The roughage supply is

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limited in order to avoid meat coloration which is undesirable in some markets such as France, Belgium, the Netherlands and Spain. The veal calf is never weaned; it is slaughtered before it reaches this stage.

The replacement calf's target is different from VC. Its aim is to become the new generation of the flock. Pre-weaning success will thus have a major impact on the future economic security of the farm. In fact, it has been scientifically established that nutrition and management during the early life can have long-term effects on the lactation performance of dairy cows.

Practically speaking, the RC has to be weaned when it reaches 13% of its mature Body Weight (BW) and has to possess a well-developed digestive system (especially the rumen). Under standard practices, the RC achieves its weaning BW (85 kg) at around 56 days of age. The key breeding parameters are thus calf BWG, Feed Intake (FI), and digestive system development (Figure n°1).

During pre-weaning, FCR is of secondary importance. The replacement calf is fed a limited amount of MR and feed concentrate is provided ad libitum in order to stimulate dry matter ingestion. Indeed, it has been demonstrated that early dry matter ingestion promotes rumen development and facilitates transition from liquid feed to solid diet.

Similarities between two types of calf production

Although the management practices and final targets are different, the underdeveloped digestive tract and the immature immune system are common to both VC and RC. Both are highly sensitive to metabolic and infectious diseases. For example, diarrhea and respiratory infections are the two most important causes of calf mortality during pre-weaning. The parameters of success shared by VC and the RC are feed intake, body weight gain and of course disease incidence.

XTRACT® a suitable tool to support VC and RC pre-weaning challenges

XTRACT® possesses two applications: in the milk replacer with XTRACT® Instant and in the feed concentrate with XTRACT® 6930. For VC, the most appropriate application is in the milk replacer (115 mg/calf/d) using XTRACT® Instant. For RC the results are more consistent with a double supplementation: in the milk replacer (115 mg/calf/d) and



the feed concentrate (100 g/ton of feed).

Digestive system

Improved calf digestive system is a characteristic observed in RC receiving XTRACT®. Indicators of rumen papillae development, such as higher ruminal concentration of propionate (+10.3%) and butyrate (+39.0%) were exhibited by RC fed XTRACT® supplemented diet (cf. Figure2). These results suggest that calves were prone to rapid digestive system development, including the rumen. Additional results in VC confirm this positive effect of XTRACT® on the digestive system. Significant higher milk intake rates were shown in XTRACT® supplemented calves: 22 seconds/liter in comparison with 30 seconds/liter for calves fed a non-supplemented diet.

Health parameters

Health improvement is also an element observed when XTRACT® is supplemented in calves. This result was observed in both VC and RC. Replacement calves had lower medication costs (-25%) in comparison to calves fed with the standard diet. For VC improvement in the health status was observed by a numerical reduction in mortality when the animals received XTRACT® supplemented milk replacer.

Growth performance

Improvement in zootechnical parameters is of great importance for both VC and RC. However what makes XTRACT® different from competitor products is its ability to act at the physiological level. Thus growth improvement is only the consequence of the product's positive actions on metabolism.

Experimental data are consistent with XTRACT®'s ability to enhance growth in young ruminants.

For example, veal calves receiving XTRACT® in milk replacer show significant improvement ($P < 0.05$) in feed intake (+ 2.4%), daily weight gain (+ 5.4%) and in the FCR (- 3.1%) in comparison to VC fed standard milk replacer. Results are presented in Table 1.

Replacement calves receiving XTRACT® in the milk replacer and in the feed concentrate exhibited significant increase ($P < 0.05$) in feed concentrate intake (+ 26.4%) and a numerical improvement in daily weight gain (+ 8.1%).

Thus, XTRACT® supplementation is a good tool to answer the breeding challenges of VC and RC during pre-weaning: high feed intake, good growth performance and reduced morbidity. A positive action on the digestive system development is also exhibited, which is a critical parameter for the future performance of replacement calves.

Take home message

- Veal calf and replacement calf have both under developed digestive systems, immature immune systems and undergo a very challenging rearing phase: pre-weaning.

- What makes XTRACT® different from competitor products is its ability to act at the physiological level: digestive system development and health improvement.

- Improvements in calf growth performance are the consequences of the product's positive action on metabolism.

- For veal calf, the best application is in the milk replacer using XTRACT® Instant.

- For replacement calf, the best application is in the milk replacer using XTRACT® Instant and XTRACT® 6930 in the feed concentrate. 🌱

-- **JOSSELIN LE COUR GRANDMAISON, Product Manager, XTRACT® Range, Pancosma**

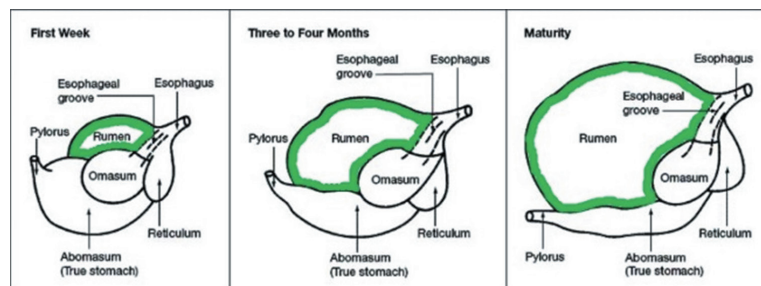


Figure 1. Development of bovine stomach compartments from birth to maturity. Picture available at: <http://extension.psu.edu/animals/dairy/nutrition/calves>

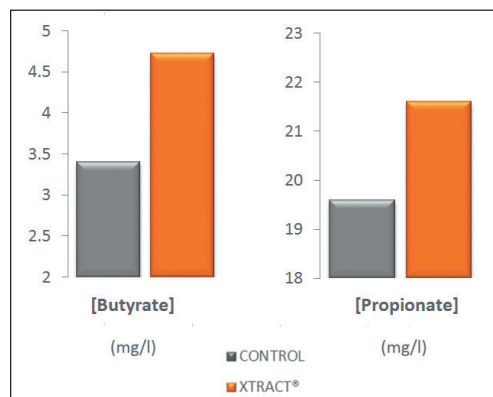


Figure 2. Ruminal propionate and butyrate concentrations

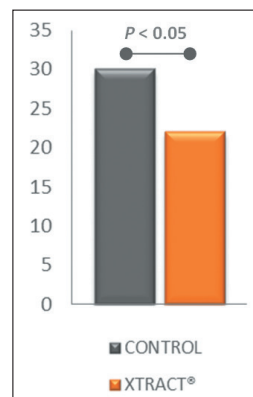


Figure 3. Veal calf milk intake rate (sec/liter)

	CONTROL	XTRACT®	Variation
Final Body weight (kg at 20 weeks)	215.51a	224.86b	+4.3%
Daily Weight Gain (kg/day)	1.192a	1.256b	+5.4%
Feed Conversion Ratio (kg/kg)	1.572	1.523	-3.1%

Table 1. Veal calf growth performance comparison between treatments (a, b: $P < 0.05$)

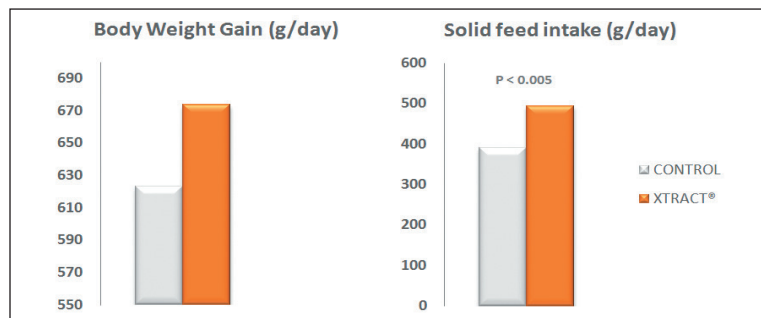


Figure 4 and 5. Replacement calf body weight gain (g/day) and solid feed intake (g/day)