HAMLET PROTEIN®
a nuscience brand



HP 300 – *The soy protein* that makes the difference in calf starter feed

Starter feed has a pivotal role in young ruminant weaning transition

The feeding strategy is essential to make the transition from the milk-fed phase to the post-weaning phase successful. In this critical phase, the choice of protein source used in starter feed counts for a lot. The initial phase, which couples the spectacular growth of the rumen with its launch in operation, is essential for the rest of the young ruminant's productive career. Maturation of the rumen is progressive and its capacity to ferment the dry feed is very partial in the first month, which implies that the important by-pass fraction can be digested by the gut.

42 to **51%** of the starter feed protein **bypasses** the **rumen** of calves aged 50 to 80 days

Ansia et al. 2021

Rumen by-passing fraction of soybean meal carries ANF's to the intestine

Soybean meal (SBM) naturally contains anti-nutritional factors (ANF's) that young animals are unable to digest due to their immature digestive tracts. The presence of ANF's in feed at a young age can cause protein malabsorption, inflammation of the digestive tract and diarrhea, compromising growth and performance, and consequently a reduction in feed efficiency.

Anti-trypsic factors (TIA) have deleterious effects on protein digestion and the health of the intestinal wall.

Galacto-oligosaccharides (GOS) such as stachyose and raffinose are not digested in the ruminant gut but fermented by the hindgut bacterial flora with negative effects on health and well-being.

Allergenic globulins such as beta-conglycinin, cause inflammation of the intestine and diarrhea

Presence of ANF's in feed for calves disrupts the intestinal villi

A



B



Figure 1 A) Diet containing soy protein low in ANF's and **B)** Diet containing soy protein high in ANF's.

Exclusive Hamlet Protein *bioprocess* makes soy *safe for young ruminants*

Hamlet Protein's patented processing technique reduces soy ANF's to a minimum, resulting in a high-quality, concentrated soy protein with the lowest level of ANF's on the market.

Comparison of analytical ANF levels of SBM and HP 300

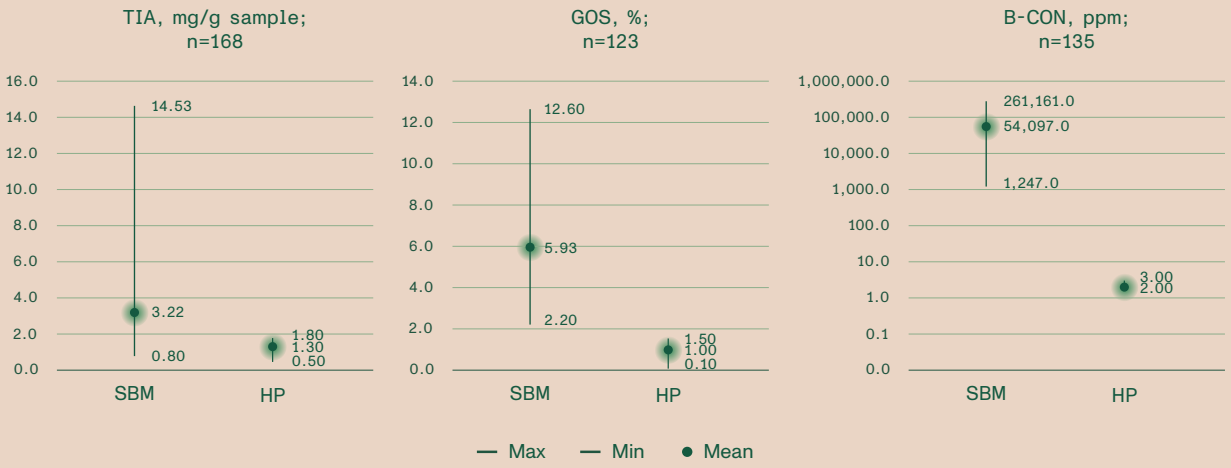


Figure 2 Analyzed content of anti-trypsic factors (TIA, mg/g sample), galacto-oligosaccharides (GOS, %) and the allergen globulin beta-conglycinin (B-CON, ppm) in soybean meal (SBM) and HP 300.

HP 300 enhances rumen microbial protein synthesis when replacing SBM in the starter feed

Trials (Ansia et al., 2021) have allowed us to gain a better understanding of what happens in the rumen of young calves around the 2nd month of their life when HP 300 replaces SBM in the starter feed. HP 300 clearly increases the production of microbial proteins which translates into better ruminal efficiency.

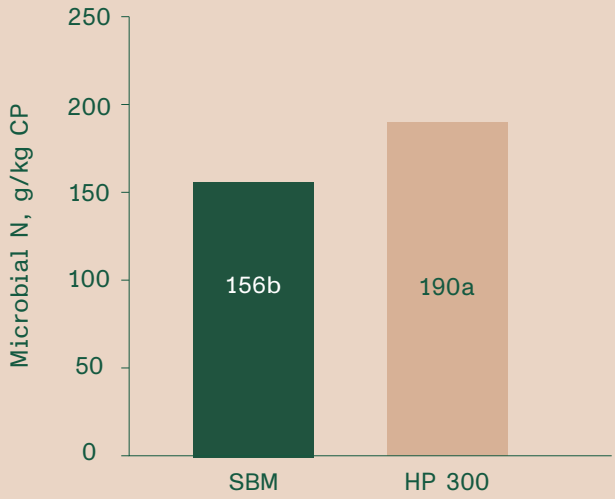


Figure 3 Efficiency of microbial synthesis (microbial N, g/kg CP) as measured at the duodenum of calves fed calf starters with soybean meal (SBM) or HP 300 as main protein source. a,b: significant differences ($p<0.05$) (Ansia et al., 2021; AU0202).

Protein digestibilility of starter feed is *enhanced* with HP 300 compared to SBM

It has also been investigated what happens after the rumen in the intestine (Ansia et al., 2021). The better protein digestibility with HP 300 compared to SBM indicates that the reduced content of soy ANF's in HP 300 benefits the young calf with a not fully developed digestive tract in terms of digestion and absorption.

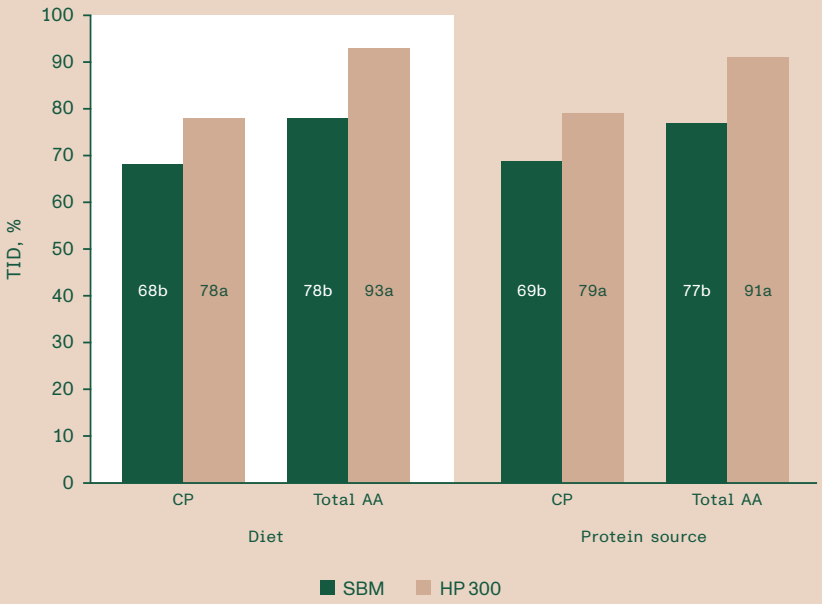


Figure 4 True ileal digestibility (TID) of crude protein (CP) and total amino acids (AA) in starter diets containing either SBM or HP 300 as main protein source as well as the TID of CP and total AA in the ingredients. a,b: significant differences ($p<0.05$) (Ansia et al., 2021; AU0202).

HP 300 in the starter feed provides *excellent* growth performance compared to SBM and permits a *good transition* after weaning

HP 300 offers better growth during the weaning and post-weaning phases. In the post-weaning phase, HP 300 improves calf weight gain compared to SBM. This is an important asset for approaching the next growth phase and the growing days gained constitute an important asset for optimizing the age at first calving of heifers or lot exit dates for fattening calves.

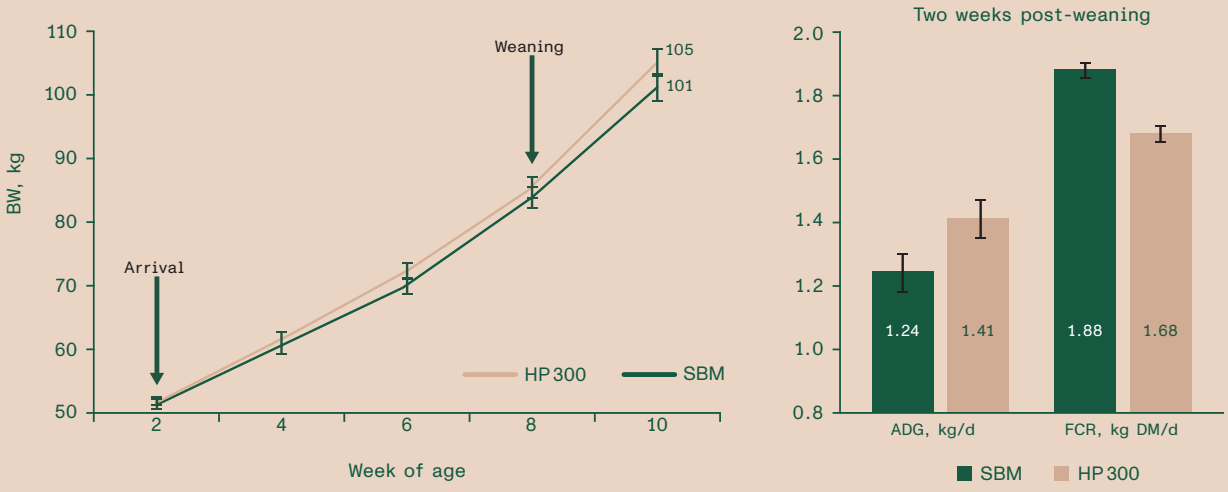
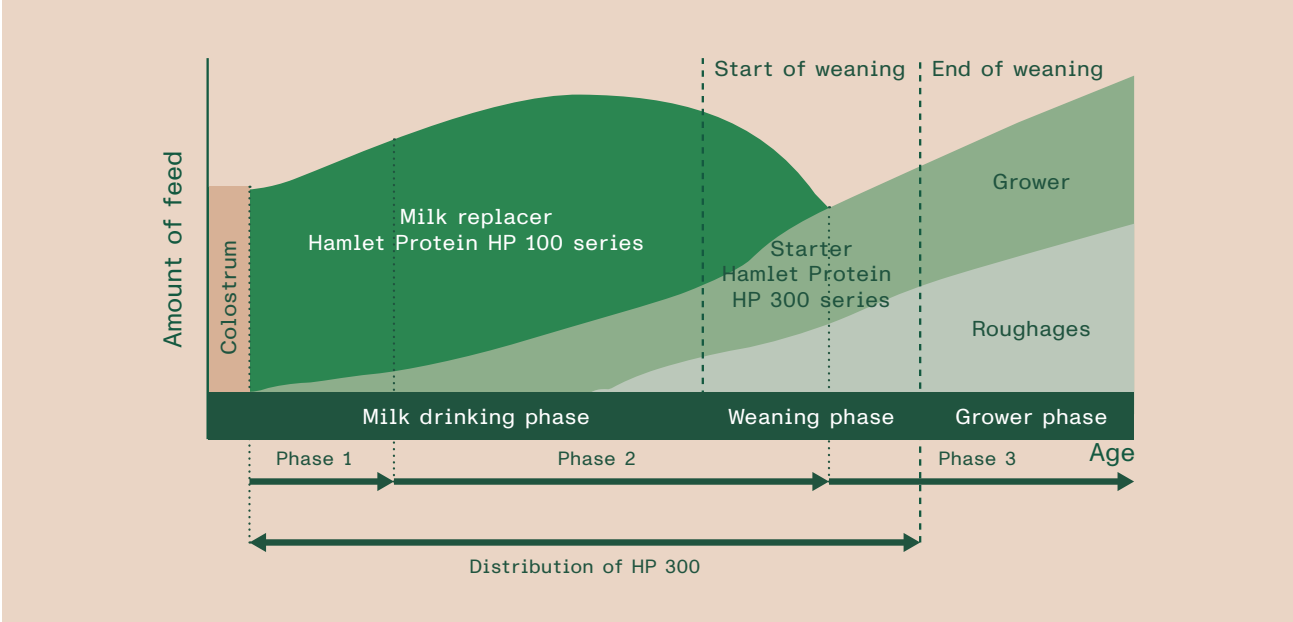


Figure 5 Performance of calves fed a HP 300 (at 24%) starter feed compared with SBM (at 30%) (Brøkner et al., 2019; AU0313).

HP 300 – application

- To be incorporated in the dry starter feed as protein concentrate source.
- In starter formulation, HP 300 is ideal to replace soybean meal and any protein source potentially carrying ANF's.
- HP 300 can be used during the pre-weaning phase until 2 to 4 weeks after weaning to ensure an optimized transition.
- In Phase 1, consumption of starter is low and accelerates in phase 2.



References

Ansia, I., Stein, H.H.; Brøkner, C., Hayes, C.A., Drackley, J.K. 2021. Nutrient digestibility and endogenous protein losses in the foregut and small intestine of weaned dairy calves fed calf starters with conventional or enzyme-treated soybean meal. Journal of Dairy Science. 104: 3.

Brøkner, C.; Rasmussen, S.H., Larsen, T., Berthelsen, C., Vestergaard, M. 2019. Effect of feeding dairy calves an enzyme-treated soybean meal on health-related blood parameters. 21. BOKU-symposium Tierernährung.



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