



➤ Effect of solid feed intake on feeding behavior and energy metabolism in growing calves

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➤ Veal calf production



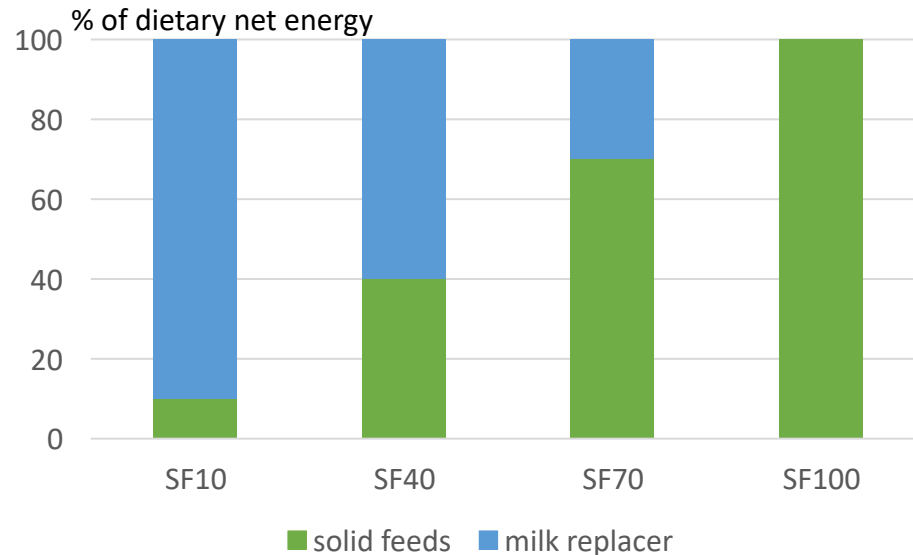
- Growth of male calves from dairy herds in specialized fattening units
 - Intake of energy:
 - ~ 70% from milk replacer
 - by-products from the dairy industry, animal fat, vegetable fat, proteins and carbohydrates
 - ~ 30% from solid feeds
 - mixture of concentrates and forages
- Reach a carcass weight of 150 kg in 23 weeks



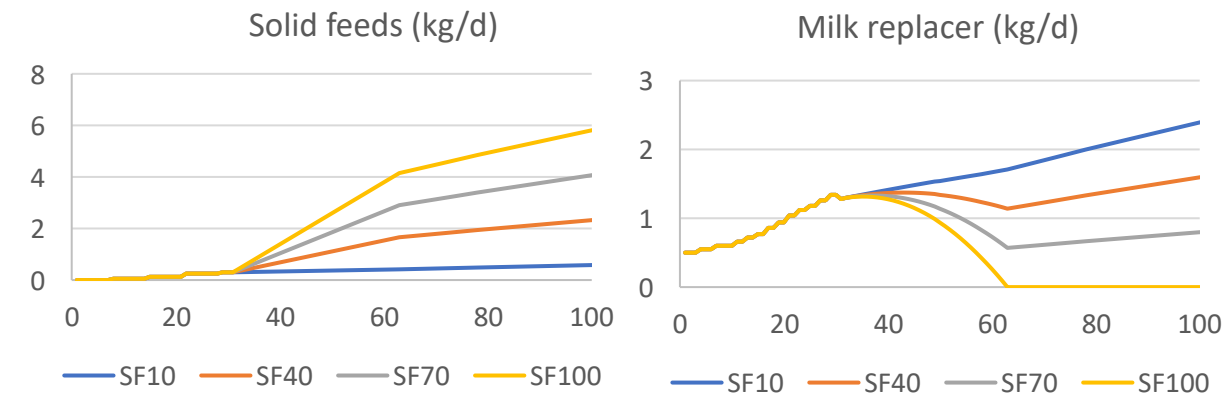
➤ Experimental design

Objectives: determine the substitution between milk replacer and solid feeds on utilization of dietary protein and energy

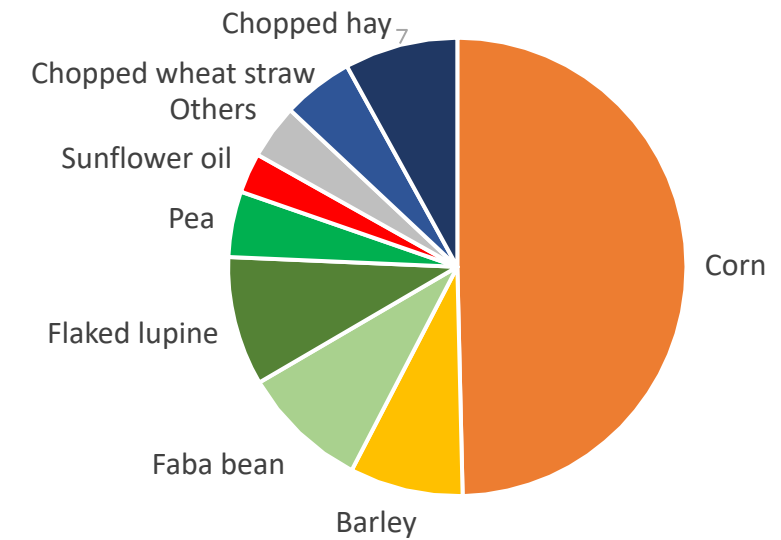
- 4 dietary treatments:



Adaptation during 100 days



	Milk replacer	Solid feeds
Gross energy (MJ/kg DM)	20.32	18.60
Crude protein (% DM)	18.76	12.86

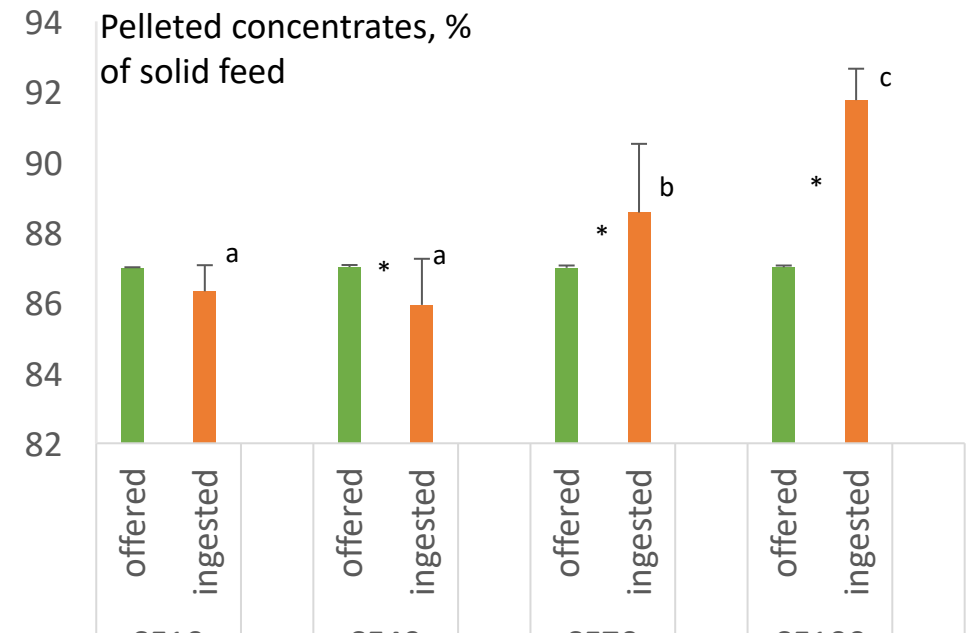
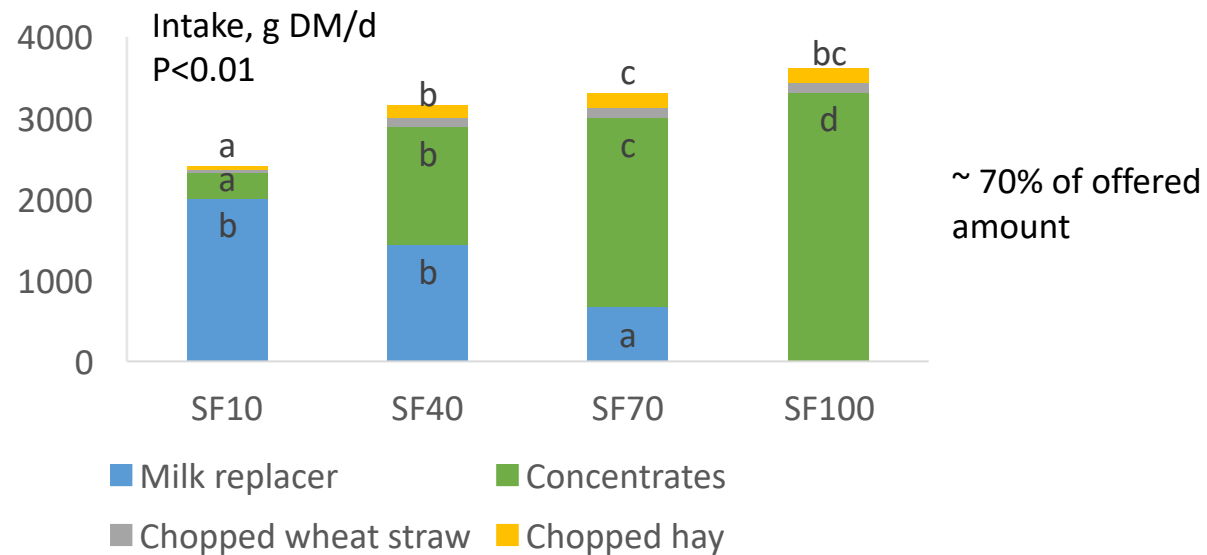


➤ Animals and measurements

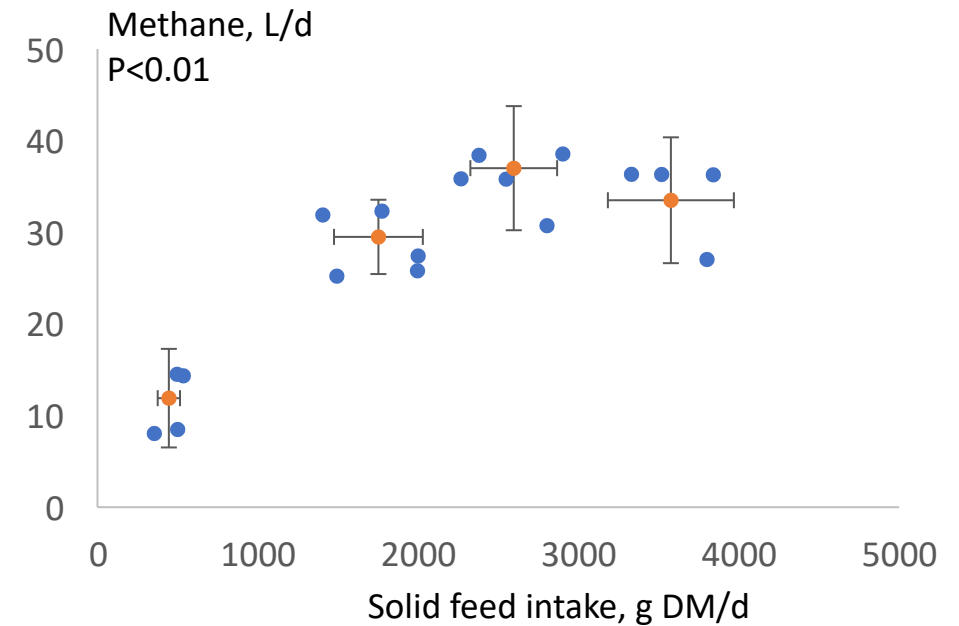
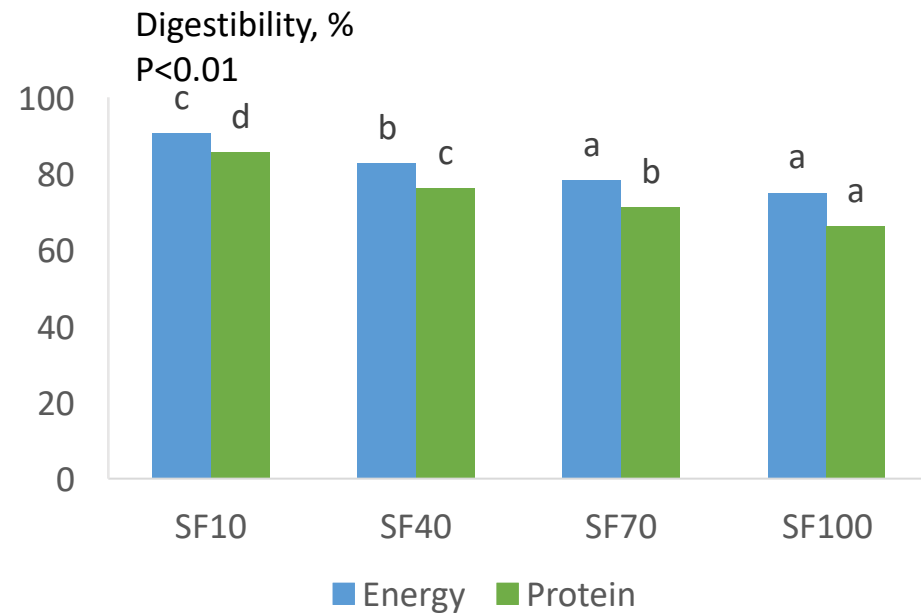
- 5 calves (159 kg BW) per treatment
- Housed during one week in an open-circuit respiration chamber
 - Measurement of milk replacer and solid feed intake
 - Feeding behavior
 - Physical activity
 - Total collection of feces and urine
 - Gas exchanges (O_2 , CO_2 and CH_4) to calculate heat production
 - Water evaporation to partition between latent and sensible heat loss
- Calculation of nitrogen and energy balance and nutrient deposition



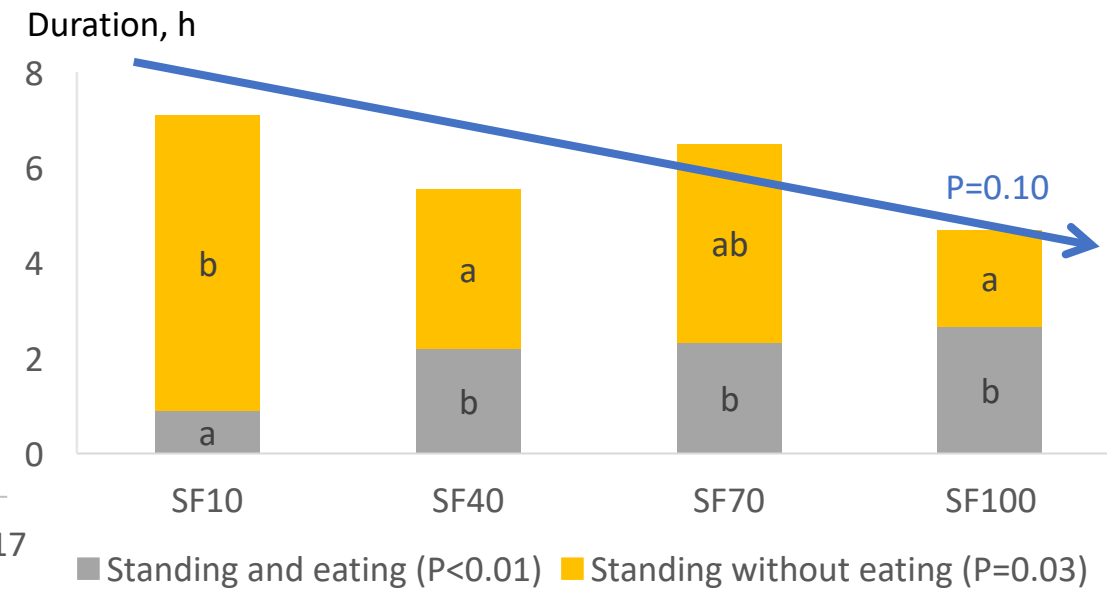
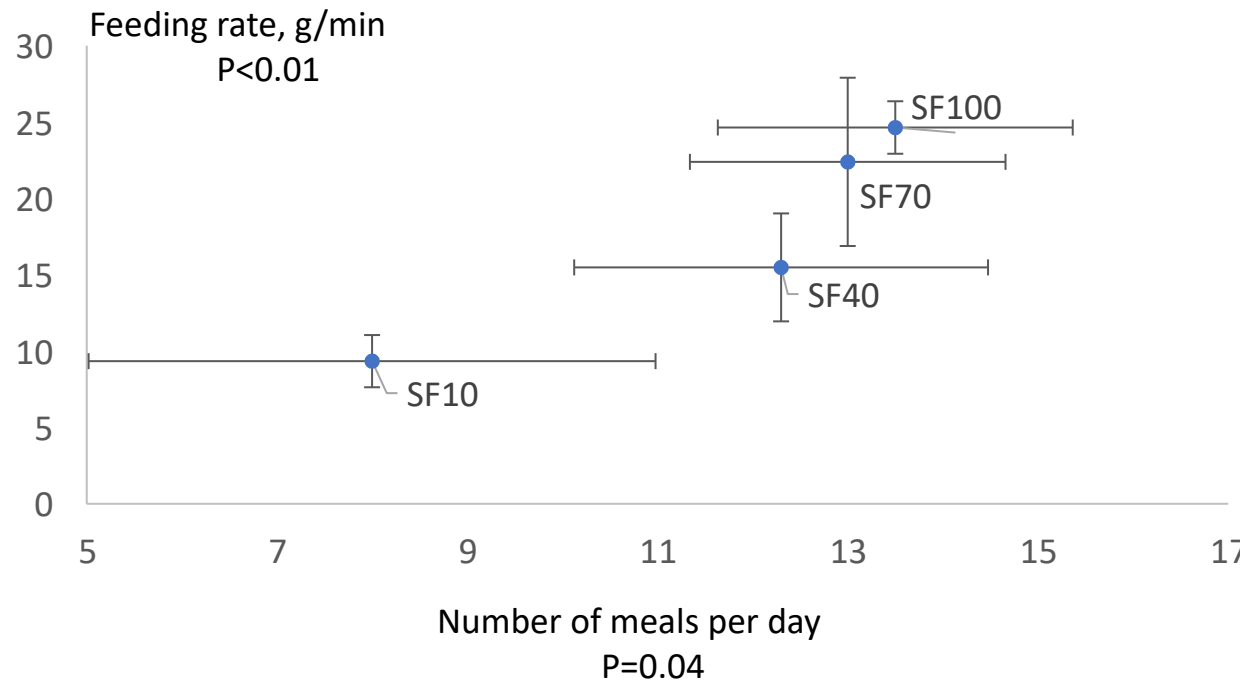
➤ Feed intake and composition of solid feeds



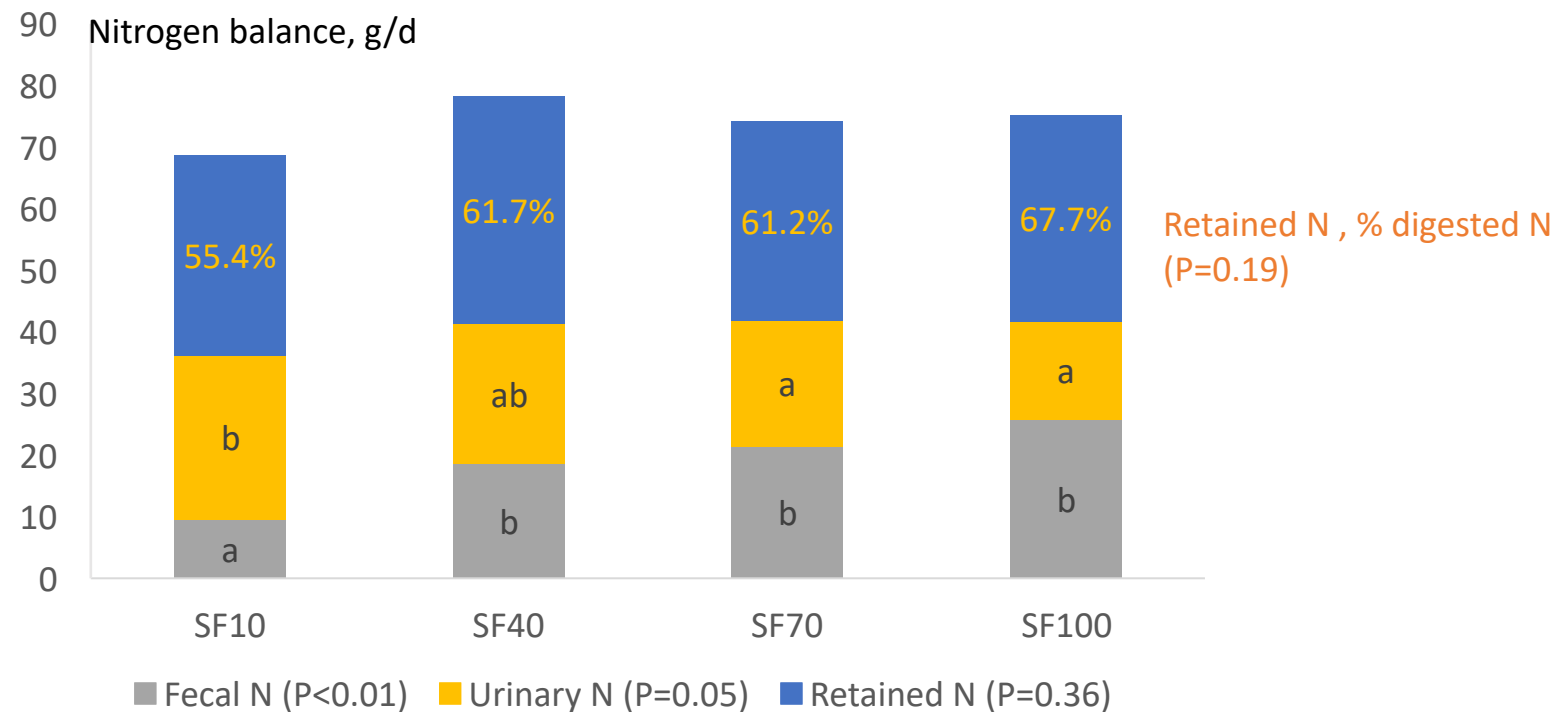
➤ Digestibility and methane production



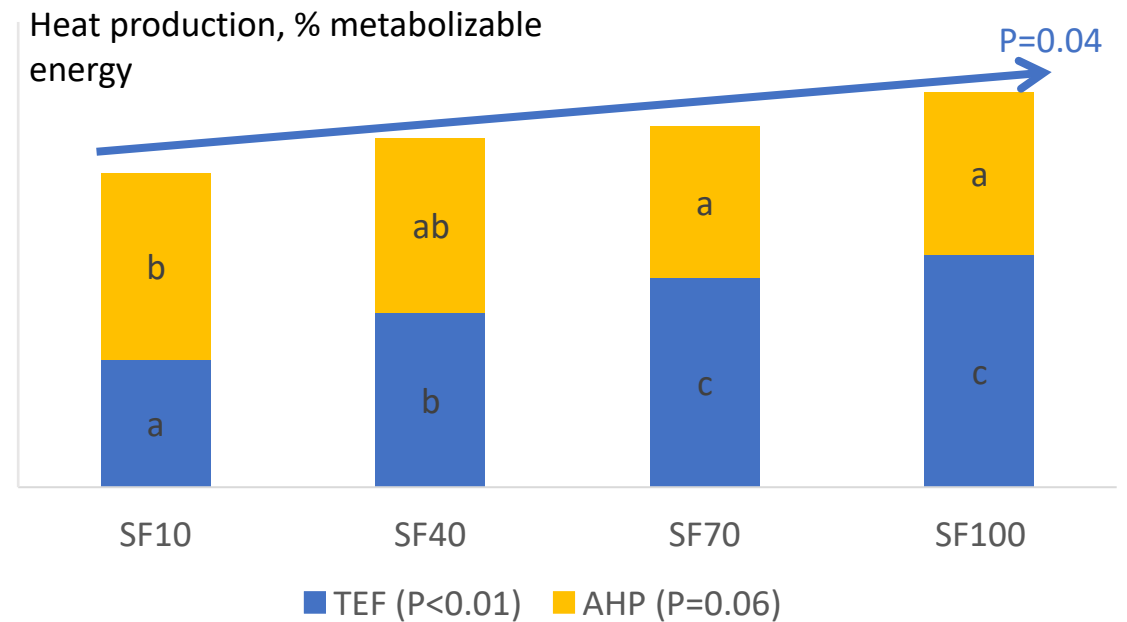
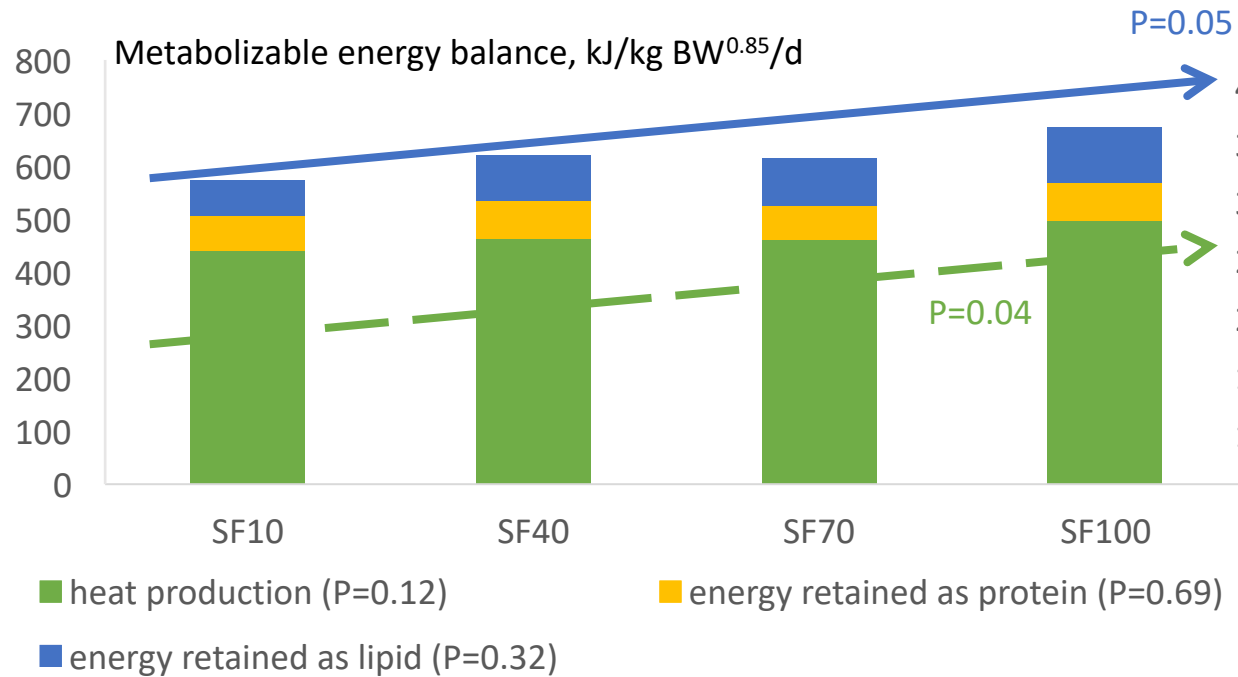
➤ Feeding behavior and physical activity



➤ Utilization of dietary protein



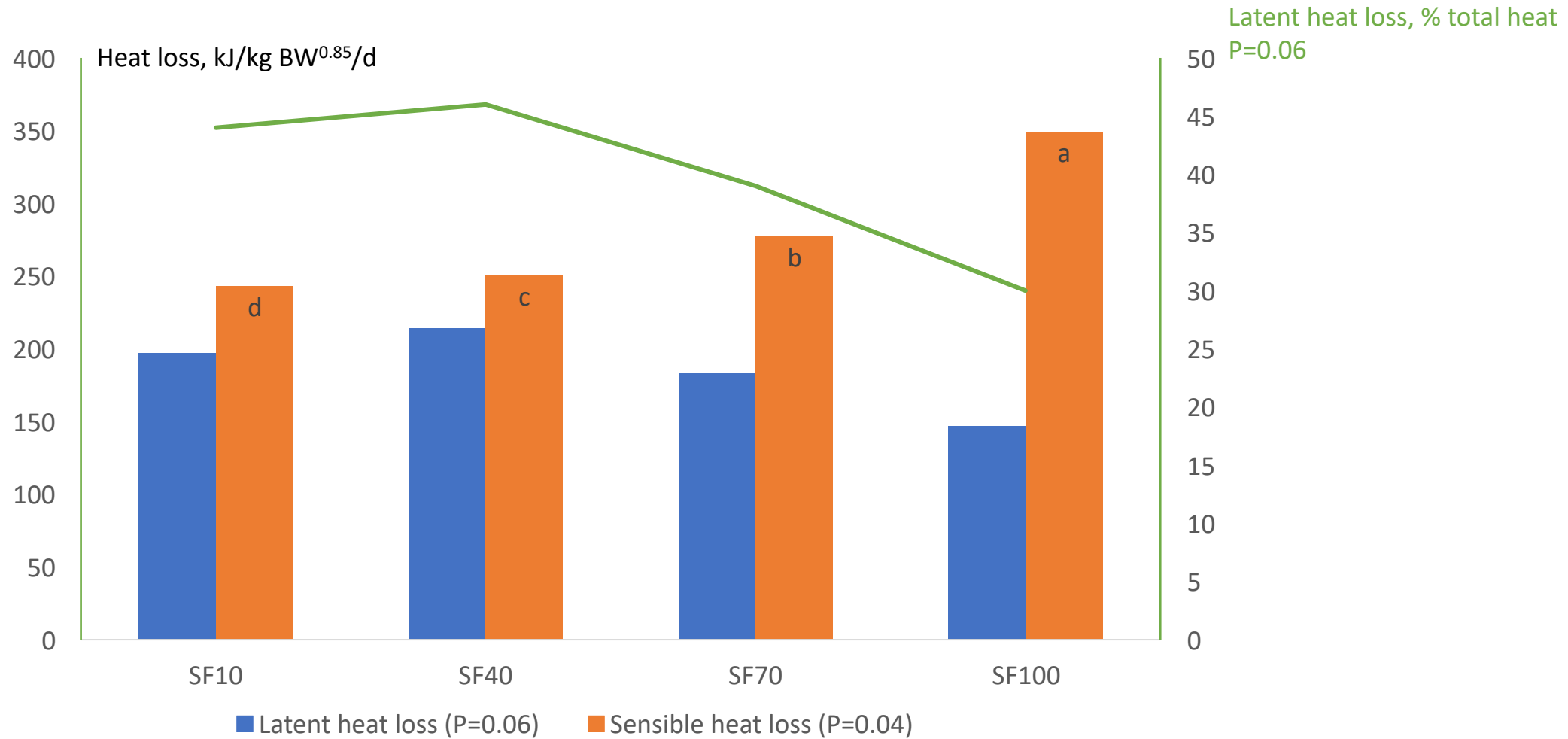
➤ Utilization of dietary energy



➤ Deposition of nutrients



➤ Routes of heat dissipation



➤ Conclusions

Substitution between milk replacer and solid feeds in calves

- Modified feeding behavior and physical activity
- Decreased digestibility of nutrients
- Maintained nutrient deposition
- Modified partitioning of heat production between thermic effect of feeding and physical activity
 - How including behavior value of solid feed in their nutritional value?
- Modified partitioning between latent and sensible routes of heat losses
 - Interaction with ambient temperature?



Thank you for your attention



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