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Influence of feed quantity and skimmed milk powder content of calf milk replacer on growth performance of rearing calves

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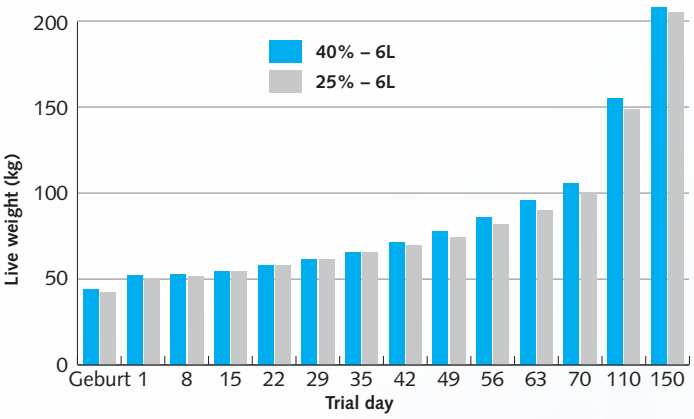
Introduction

For successful calf rearing, the growth potential of young calves should be exploited optimally. To reach best possible achievements during intensive calf rearing, the DLG increased in 2011 their recommendation of calf milk replacer (CMR) fed per calf and day to 1000g during the first six weeks of life (DLG 2011).

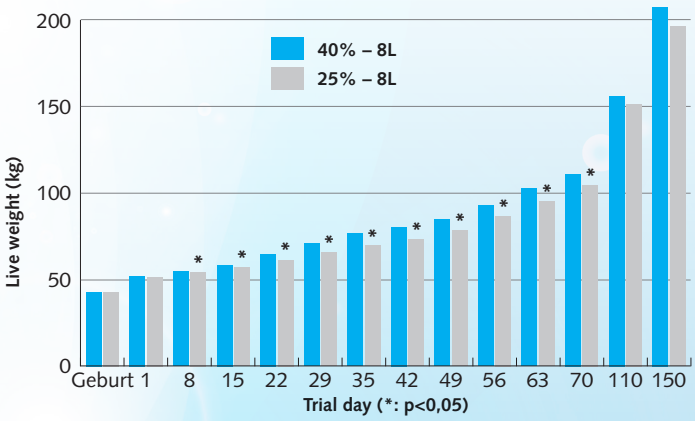
Protein quality of CMR therefor is of great importance. CMR with high contents of skimmed milk powder are especially emphasized (DLG 2011). However, skimmed milk powder may be replaced partly by vegetable protein sources as e.g. hydrolyzed wheat protein, to economize costs in calf rearing. A contrary sentiment is the decreased digestibility of CMR containing vegetable protein during first weeks of life, resulting in the recommendation to avoid the application before the third week of life (Kunz 2009).

Material and methods

- From 1st trial day onwards (2nd week of life), the amount of milk containing the applied calf milk replacer varied, according to the amount of retrievable quantity per day (6 liter vs. 8 liter).
- One CMR contained 40% skimmed milk powder (SMP) without vegetable protein; one CMR contained 25% skimmed milk powder with 4% hydrolyzed wheat protein.
- The applied concentration for all trial groups was 160g of CMR per liter water.
- The calves were able to retrieve their daily maximum quantity (6l or 8l) until 35th trial day (TD); afterwards, the quantity was decreased linearly to 0 until 63rd TD.
- The calves were offered additionally a total mixed ration (TMR) containing 87% concentrates for calves and 13% barley straw from 1st trial day onwards. Between 70th and 110th trial day, the TMR was adapted to cow´s TMR.



Picture 1: average live weight development in kg of the 6-liter variant (LS-Means)



Picture 2: average live weight development in kg of the 8-liter variant (LS-Means)

Results

- The increase in milk quantity from 6l to 8l during the first weeks of life showed a positive effect on daily weight gain in the first weeks of life.
- The trial group receiving 8l with higher SMP content (without vegetable protein in the CMR) showed significant better weight development.
- At the end of the rearing period, after 150 trial days, the influence of vegetable protein as well as the proportion of skimmed milk powder of the CMR was only tendencially recognizable.
- The CMR without vegetable protein (40% SMP) showed 5-10kg higher live weights at the end of the trial period, as well for the 6l as for the 8l trial variant.
- Daily weight gains until 150th TD was for all groups in this trial ca. 1000g on average, being in line with the actual DLG recommendation for the first 6 months in life and a desired age of first calving of 24 months (DLG 2016).

Literature

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