Similar carcass-, meat- and eating quality of heavy young bulls produced in three different feeding system

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Introduction

•In Denmark most beef meat comes from culled dairy cows.
•We wanted to test:
- whether it was possible to produce heavy young bulls as an alternative to cow meat (i.e., same carcass wt)
- which feeding should be used in this type of beef production system

•Furthermore, the consequences on meat and eating quality by feeding more roughage-based diets compared with traditional concentrate-feeding needed to be evaluated in detail.

Objective

Evaluate the potential of producing heavy young bulls in three different feeding systems and the consequences on:
- Production performance
- Carcass characteristics
- Quality characteristics of the meat.

Housing conditions for bull calves and young bulls

Materials and Methods

Animals
- Holstein bull calves (n=45) purchased from 7 private farms at 100 d of age (113±4 kg).
- Calves randomly divided into three treatment groups of 15 calves. Recordings started at 4 mo. of age (123 kg).

Treatments
- The control treatment (**CON**) comprised *ad libitum* access to a concentrate ration (9.07 MJ NE/kg DM)
- The two other treatment groups had *ad libitum* access to a maize silage-based ration (TMR) (7.42 MJ NE/kg DM) from start of experiment until 10½ months of age, when:
  - One group continued on a low TMR (**TMR-**)
  - One group changed to a barley-maize silage-based ration (**TMR+**) with high energy (8.21 MJ NE/kg DM)

All three treatment groups had free access to barley straw.
All diets were offered *ad libitum*.
Animals were loose-housed on straw bedding.

Bulls were slaughtered at a fixed weight (585±3 kg LW)

Results

- Age at slaughter was 476, 515, and 483 d for CON, TMR-, and TMR+, respectively
- Average Daily Gain (ADG) from birth to slaughter was 1148, 1058, 1125 g/d for CON, TMR- and TMR+ (P<0.04)
- Dressing % (55.0), carcass wt (322±2 kg) and other carcass characteristics were not different between treatment groups
- TMR+ tended to have highest EUROP conformation (P<0.14)
- Extensive meat- and eating quality analyses showed only minor differences between the three treatment groups, i.e.,:
  - pH_{ult}, L*, a*, and b*-values (5.6, 33.2, 19.4, and 9.1, ns)
  - Intramuscular fat (2.1%, ns)
  - Shear force value (106 N, ns)
  - Taste panel tenderness (9.8, 9.5, and 9.1, P<0.05)
- Only 2 cases of liver abscesses (both in CON group)

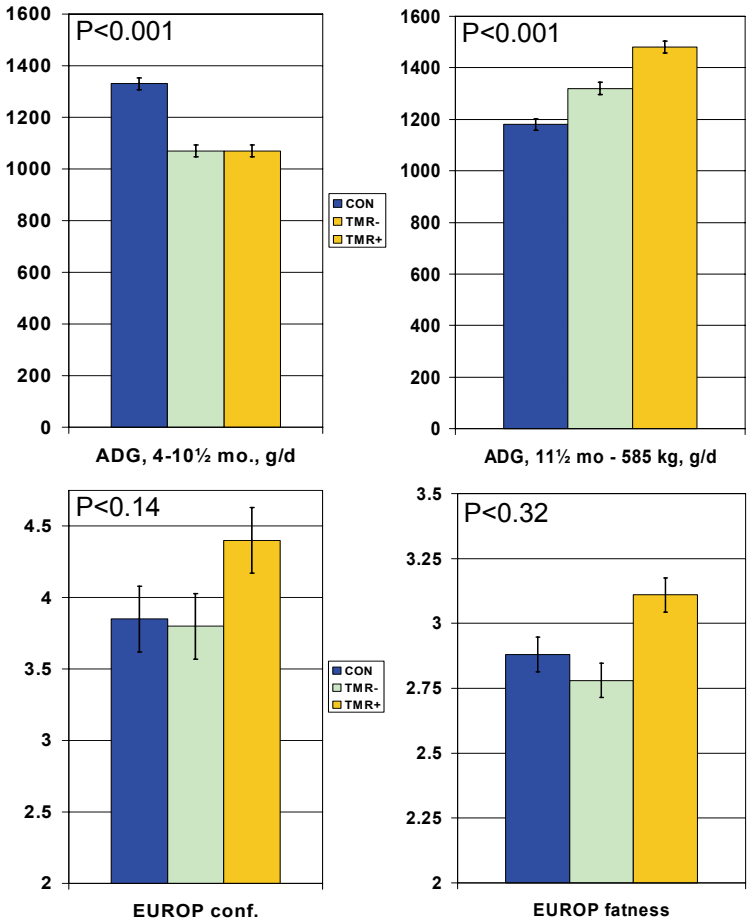

***Figure 1**. ADG from 4 to 10½ mo. and from 11½ mo. to 585 kg, carcass weight and EUROP conformation and –fatness in the three feeding groups (LS Means±SEM)*

Conclusion

If heavy young bulls are slaughtered at a similar LW (i.e., 585 kg), it is possible to produce the same carcass and meat quality with all three feeding regimens.

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