Protein metabolism of Nellore steers (*Bos indicus*) with low and high residual feed intake

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INTRODUCTION

Residual feed intake (RFI) is a feed efficiency trait independent of growth and mature weight. Genetic improvement with RFI may reduce the costs of feeding cattle. However a better understanding of biological processes underlying variation in RFI is necessary in zebu cattle.

OBJECTIVES

It was aimed to evaluate myofibrillar protein metabolism in high- and low-RFI zebu (*Bos indicus*) cattle.

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MATERIAL AND METHODS

- Seventy-two Nellore steers (16 to 21 month-old, 334±19 kg initial body weight [BW])
- Fed a finishing ration (74.5% TDN, 14.3%CP) on an ad libitum basis, for 70 days.
- Daily dry matter intake (DMI) and average body weight gain (ADG) were measured individually.
- RFI was calculated as the difference between actual DMI and the predicted DMI determined by linear regression of DMI on mid-test $BW^{0.75}$ and ADG.
- The lowest and highest 12 RFI steers were classed as low- (most efficient) and high-RFI (least efficient) groups, respectively.
- Total urine (48 h) was collected for determination of daily 3-methylhistidine (3MH) excretion and myofibrillar protein breakdown rates.

CONCLUSION

Myofibrillar protein metabolism did not differ between low- and high-RFI steers.

RESULTS

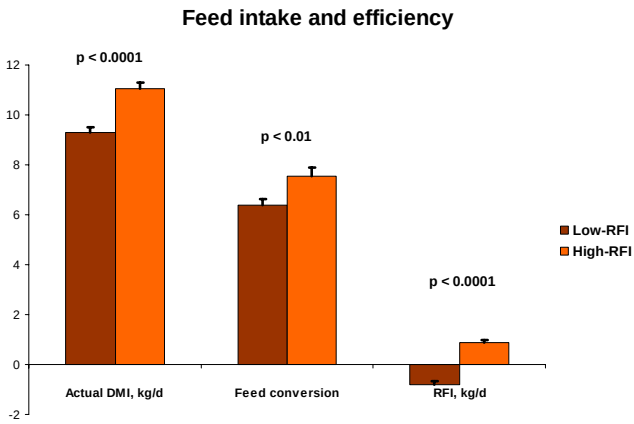

Figure 1 – Feed intake and feed efficiency of low and high RFI steers

Low-RFI steers presented lower feed intake, feed conversion and residual feed inatke than high-RFI steers.

However, no differences were observed for $BW^{0,75}$ and ADG, showing that RFI is phenotypically independent of its components traits.

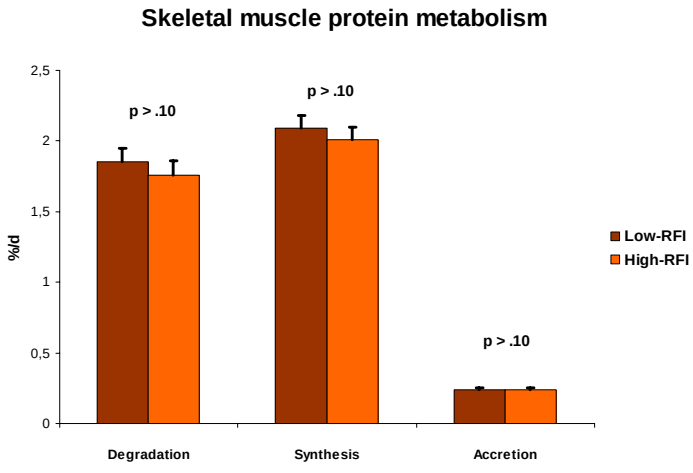

Figure 2 – Skeletal muscle protein metabolism of low and high RFI steers

No differences between most and least efficient cattle were observed for myofibrillar fractional degradation rate, fractional rate of protein synthesis and fractional rate of protein accretion in the skeletal muscle mass.

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