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Introduction

Residual gain is a measure of efficiency associated with faster animal growth. However, the differences between the classes of efficiency for gain, as well as the differences among genetic groups of water buffaloes regarding the composition of the empty body weight of these animals are still unknown.

Objective

Evaluate the effect of residual gain (RG) on body chemical composition of water buffaloes of three genetic groups (GG: Jafarabadi, Mediterranean, and Murrah) and verify the presence of chemical variables related to this efficiency measure.

Material and Methods

One-hundred-forty-eight non-castrated male (338.29 ±64.16 kg initial body weight; 370 ±28 days of initial age) from two similar experiments were used. The animals remained in feedlot and were slaughtered after 240 days (adaptation + trial periods). The RG was calculated considering 84 days after adaptation period. After the slaughter, the empty body weight (EBW) of each animal was obtained and the left half-carasses were dissected into muscle, fat, and bone, after 24h of cooling. The chemical composition [moisture, crude protein (CP), ether extract (EE), and ash] of each ground tissue was analyzed by the classical method. The body CP was also determined based on CP fat-free dry matter (CPFFDM). Data were analyzed using MIXED procedure in SAS. The class of RG, genetic group, and the resulting interaction were tested as fixed effect and year as a random effect.

Results

Table 1. Means and probabilities for body chemical variables according to class of residual gain and genetic group effects of water buffaloes

Variables	Class of Residual Gain		SEM	P-value
	High	Low		
EBW, kg	424.83	381.99	18.34	0.021
Water, kg of EBW	237.97	215.29	10.20	0.016
Ash, kg of EBW	24.90	24.89	1.25	0.809
CP, kg of EBW	78.53	70.50	3.78	0.074
CPFFDM, kg of EBW	76.72	75.10	0.76	0.107
EE, kg of EBW	88.96	76.35	5.16	0.035

Variables	Genetic group			SEM	P-value
	Jafarabadi	Mediterranean	Murrah		
EBW, kg	434.32a	383.07b	373.17b	17.48	0.002
Water, kg of EBW	245.20a	215.25b	205.92b	9.73	<0.001
Ash, kg of EBW	26.30a	23.98b	23.76b	1.20	0.085
CP, kg of EBW	79.72a	72.95b	68.85b	3.60	0.014
CPFFDM, kg of EBW	75.97	76.67	75.67	0.72	0.603
EE, kg of EBW	88.64a	76.27b	79.89b	4.95	0.057

EBW = empty body weight; CP = crude protein; CPFFDM = crude protein fat-free dry matter; EE = ether extract; SEM = standard error of means; P = significance considered if $P \leq 0.05$ and tendency if $P > 0.05$ e $P \leq 0.10$.

Highlights

- ✓ Effect of class of RG was detected for the variables EBW (P=0.021), water (P=0.016), and EE (P=0.035);
- ✓ While tendency was observed for CP (P=0.074), for which animals classified as more efficient for residual gain demonstrated high values;
- ✓ Effect of GG for EBW (P=0.002), water (P<0.001), and CP (P=0.014) variables;
- ✓ Tendency of GG effect was observed for ash (P=0.085) and EE (P=0.057);
- ✓ Jafarabadi showed high values for all the variables cited.

Conclusions

In conclusion, there are difference in the body chemical composition of water buffaloes according to the animal efficiency evaluated by residual gain, as well as according to genetic groups.



Water buffaloes at slaughterhouse and carcasses, respectively

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