

## **Effects of bypass fat on buffalo carcass characteristics, meat nutrient contents and profitability**

### **ABSTRACT**

The deposition and distribution of buffalo body fats play a vital role in the quality of the buffalo carcass and are of great commercial value, since the carcass quality influences the profitability and consumer acceptability of ruminant meat. The current study examined the effect a mixture of 4% bypass fat and 26% concentrate supplementations in buffalo basal diet had on both the carcass characteristics and the proximate and fatty acid composition in longissimus thoracis et lumborum (LTL), supraspinatus (SS) and semitendinosus (ST) muscles of Murrah cross and swamp buffaloes. In addition, profit and loss analyses were performed to determine the profitability. This study employed a completely randomized  $2 \times 2$  factorial arrangement with two diets, two breeds and four replicates per treatment. A total of sixteen buffaloes (eight buffaloes per breed, bodyweight  $98.64 \pm 1.93$  kg) were randomly assigned into two dietary groups. The first group was given Diet A, which consisted of 70% *Brachiaria decumbens* + 30% concentrate, whereas the second group was given Diet B, which consisted of 70% *Brachiaria decumbens* + 26% concentrate + 4% bypass fat. The buffaloes were fed for 730 days before slaughter. The results showed that supplemented bypass fat significantly ( $p < 0.05$ ) increased the pre-slaughter weight, hot and cold carcass weights, meat:fat ratio, pH at 24 h, moisture and crude protein of LTL, ST and SS, the ether extract of LTL and ST and the meat fatty acid of C16:0, C16:1, C18:1, PUFA n-6/n-3 and total MUFA. The carcass yield and carcass fat percentages, the ash content in ST, the EE in the SS muscle and the meat fatty acid of C18:3, total PUFA n-3, UFA/SFA and PUFA/SFA were significantly ( $p < 0.05$ ) decreased. Furthermore, Murrah cross showed a significantly ( $p < 0.05$ ) higher pre-slaughter weight, hot and cold carcass weights, carcass bone percentage and total fatty acid, but a lower ( $p < 0.05$ ) meat:bone ratio, ash of LTL and CP of LTL and ST when compared to swamp buffaloes. No significant changes were found in the proximate composition of different types of muscle, but the ST muscle revealed significantly high C14:0, C16:0 and C18:1, and the SS muscle had high C18:2 and total fatty acid ( $p < 0.05$ ). Supplementing using bypass fat increased the cost of buffalo feeding but resulted in a higher revenue and net profit. In conclusion, the concentrate and bypass fat supplementations in the buffalo diet could alter the nutrient compositions of buffalo meat without a detrimental effect on carcass characteristics, leading to a higher profit.

**Keyword:** Buffalo; Carcass; Costs; Meat; Supplementation