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## Effect of Dietary Energy Level on Meat Quality and Characteristics of Sudan Baggara Heifers

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### Abstract

The aim of the present study was to determine the influence of dietary energy level on meat quality attributes and meat chemical composition of Baggara heifers. Forty eight Baggara heifers of an average body weight of  $165 \pm 15.3$  kg were placed in feedlot for 16 weeks at Kuku Animal Production Research Station, Khartoum North, Sudan. Heifers were fed on three diets of (17.5 %) crude protein and varying in dietary energy levels; 9.5, 10.5 and 11.5 MJ kg<sup>-1</sup> named as low energy, medium energy and high energy diet respectively. After finishing seven heifers from each group were slaughtered at an average weight of 235.00, 245.00 and 250.67 kg for heifers fed low, medium and high energy diet respectively. After the cold carcass was quartered, longissimus dorsi muscle samples were taken from each heifer carcass to measure meat quality attributes and meat chemical composition. Colour measurements; indicated that degree of redness (19.79 21.12) and meat from heifers fed low energy diet had significantly ( $p < 0.01$ ) the lowest degree of redness. While meat from heifers fed the highest energy diet had the lowest ( $p < 0.05$ ) degree of yellowness. pH (5.025.10) and Water holding capacity (2.402.62) were significantly ( $p < 0.01$ ) higher in meat from heifers fed on low energy diet. Cooking loss (37.07-38.22) although did not affected by dietary energy levels it was improved by the energy level. For meat chemical composition the data indicated that meat from heifers fed high energy diet had significantly ( $p < 0.01$ ) highest ether extraction (2.46 3.1). Crude protein (19.9720.97) and non protein nitrogen (0.45 0.46) were significantly ( $p < 0.01$ ) higher in meat from heifers fed low energy diet. Sarcoplasmic proteins (5.12 5.72) and it was ( $p < 0.05$ ) lower in meat from heifers fed low energy diet. Moisture, ash and myofibrillar protein were higher in meat from heifers fed low energy diet. However, sensory evaluation indicated that flavor intensity, juiciness and tenderness were improved by energy level. Furthermore, meat obtained from heifers fed high energy diet was significantly ( $p < 0.05$ ) more acceptable than that from the other two groups. It could be concluded that finishing Baggara heifers on medium to high energy diets, will improve meat quality and acceptability.

**Keywords:** Baggara heifers, chemical composition, meat quality