

**MILK YIELD AND QUALITY OF LACTATING DROMEDARY CAMELS
UNDER CONCENTRATE SUPPLEMENTATION IN ISIOLO COUNTY,
KENYA**

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Requirements for the Award of the Degree of Master of Science in Animal
Nutrition of Chuka University**


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DECLARATION AND RECOMMENDATION

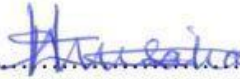
Declaration

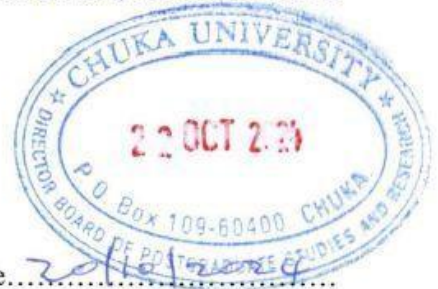
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This thesis has been examined, passed and submitted with our approval as University Supervisors

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DEDICATION

This work is dedicated to my late loving parents for their support, encouragement and prayers and to my son, Amani and daughter, Baraka.

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ABSTRACT

Climate variability and frequent droughts have caused feed to become the major factor affecting milk production in dromedary camels due to less biomass and quality. The objective of this study was to determine the nutritive contribution of selected shrubs and fodder and effect of concentrates supplementation on camel milk yield and quality during dry season to minimize fluctuations in production. Nineteen shrubs samples were collected during the dry season based on palatability for proximate analysis, *in vitro* digestibility and gas production. A feed supplement containing 17.04% crude protein (CP), and 2864.62 Kcal/kg digestible energy (DE) was formulated using wheat bran (WB), sorghum grain (SG), sunflower seed cake (SFC), maize germ (MG), mineral and vitamin premix. A feeding trial was conducted with four dietary treatments in a 4x4 Latin square design using eight lactating camels for 56 days. The treatments were; ad libitum fodder browsing without supplementation (control-D0), ad libitum fodder browsing plus 1 kg, 1.5 kg and 2 kg concentrate for diet 1 (D1), diet 2 (D2) and diet 3 (D3) respectively. The camels were supplemented every evening and milk yield recorded every morning after milking. Body weight (BW) and milk samples were taken fortnightly at the end of every treatment. Milk samples were analyzed for proximate and fatty acid composition. The Dry Matter (DM) percentage on all dried sampled shrubs was high averaging 90% with *Acacia brevispica* recording 93.99% and *Haloxylon salicornicum* 86.71%. The CP value of the edible component ranged between 4.98 - 26.66%. The Neutral Detergent Fibre (NDF) and Acid Detergent Fibre (ADF) values ranged from 24.90 - 72.85%. and 19.02 - 55.85% respectively. Cumulative gas production was high in *Haloxylon salicornicum* (0.00-70.43ml/200mg) and low in *Zizyphus mucronata* (23.31ml/200mg) with increasing incubation time from 2 to 15 hours. Supplementation slightly increased the protein, fat content and milk yield over the experimental period. Milk protein content for treatment 2 and 4 were similar (2.82%). D3 displayed higher milk fat content (3.51%). Total saturated fatty acids in milk were higher (68.13%) in D1. Unsaturated fatty acids remained relatively constant under all diets (29.9%). Milk proximate and fatty acid profile indicated stable milk composition while supplementation increased yield. Availability of water and supplementation cushioned the camels from body condition deterioration despite the diminishing pasture stocks. Therefore, supplementing lactating camels during dry season increased milk production.