International Journal of Poultry Science 13 (4): 208-213, 2014
ISSN 1682-8356

Effect of Supplementation of *Moringa oleifera* Leaf Meal in Broiler Chicken Feed

D.W. Gakuya[1], P.N. Mbugua[2], B. Kavoi[3] and S.G. Kiama[3]
[1]Department of Clinical Studies, Faculty of Veterinary Medicine,
University of Nairobi, P.O. Box 29053 00625, Kangemi, Nairobi, Kenya
[2]Department of Animal Production, Faculty of Veterinary Medicine,
University of Nairobi, P.O. Box 29053 00625, Kangemi, Nairobi, Kenya
[3]Department of Veterinary Anatomy and Physiology, Faculty of Veterinary Medicine,
University of Nairobi, P.O. Box 30197 00100, Nairobi, Kenya

Abstract: The purpose of this study was to evaluate the effect of supplementing *Moringa oleifera* leaf meal (MOLM) at different levels in broiler chicken. Broiler starter and finisher diets were formulated using raw materials obtained from local feed manufacturers. MOLM was first analyzed for crude protein and then added to diets at levels of 0% (T1), 7.5% (T2), 7.5% (T3) (without Methionine and lysine), 15 (T4) and 30% (T5). Two hundred (200) day old broiler chicks were randomly allocated into the 5 treatment groups with 4 replicates of 10 birds each and the diets introduced. The feed intake, feed conversion ratio (FCR), weight gain, lipid profile, abdominal fat pad and feed digestibility were determined. The MOLM crude protein level was 23.33%. The weight gain was significantly different between the various diets with the highest weight gain being in T1 at 1464 and the lowest in diet T5 at 500. MOLM supplementation at levels above 7.5% decreased the feed intake and dry matter digestibility. The abdominal fat pad (AFP) was significantly higher in T1 compared to T2, T4 and T5. The males had a significantly high levels of High density lipids (HDL) than females in T2, T3 and T4 ($p<0.05$). The yellow colour of the carcass increased with the increased levels of MOLM. It was concluded that *Moringa oleifera* leaf meal (MOLM) was well tolerated and can only be included in the feed to levels of up to 7.5% as higher levels affected weight gain, feed intake and digestibility. Further studies on the yellowing of the carcass, its quality and acceptability by consumers is needed.

Key words: *Moringa oleifera* leaf meal, broiler chicken, feed intake, weight gain, abdominal fat pad, feed digestibility

INTRODUCTION

The poultry production in Kenya is constrained by inadequate supply of good quality feed and escalating costs. This is due to poor availability and expensive raw materials especially the proteins. The competition of humans and livestock for the same products further worsens the situation and therefore the need for sourcing for other available low cost materials that would substitute the raw materials already in the market especially the soybean and fishmeal.

Moringa oleifera is the best known of 14 species of Moringa tree (family Moringaceae). It is a fast-growing, drought-resistant tree native to sub-Himalayan tracts of northern India, Pakistan, Bangladesh and Afghanistan. It is now growing worldwide in the tropics and subtropics (Fahey *et al*., 2001). Its leaves and pods have been reported to be of great nutritional value and yield many vitamins and minerals. The leaves and the young green pods can be eaten like other vegetables.

Moringa has for long been consumed by humans and all its parts are edible. The tree has in recent times been advocated as an outstanding indigenous source of highly digestible protein, Calcium, Iron, Vitamin C and carotenoids suitable for utilization where undernourishment is a major concern especially in the developing world (Fuglie, 1999). According to Price (1985), *Moringa oleifera* leaves would be of great use in treating malnutrition, in pregnant women and nursing women. The leaves of Moringa have also been reported to be rich in protein, carotene, iron and ascorbic acid while the pods are rich in amino acids lysine (CSIR, 1962). These excellent nutritional characteristics would make suitable as forage for feeding animals (Nuhu, 2010).

Analysis by Makkar and Becker (1996) on samples of extracted and unextracted Moringa leaves used as a component of animal feed reported a crude protein values of 43.5 and 25.1%, respectively. Therefore Moringa in both of these forms would be a good source of protein for livestock. Similarly Gupta *et al*. (1989) reported values for crude protein, crude lipids and ash to be 26.4, 6.5 and 12%, respectively. *Moringa oleifera* leaves were also reported to contain crude protein 27.51%, crude fibre 19.25%, crude fat 2.2.3%, Ash

Corresponding Author: D.W. Gakuya, Department of Clinical Studies, Faculty of Veterinary Medicine, University of Nairobi, P.O. Box 29053 00625 Kangemi, Nairobi, Kenya