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Effect of Supplementation of *Moringa oleifera* (LAM) Leaf Meal in Layer Chicken Feed

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Abstract: The purpose of this study was to investigate the effect of supplementing *Moringa oleifera* leaf meal (MOLM) at different levels in layers feed. Layers mash was formulated using raw materials obtained from local feed manufacturers and MOLM was included in the various diets at levels of 0% (T1), 1.25% (T2), 2.5.% (T3), 5% (T4), 7.5% (T5), 10% (T6). Diet 1 (T1) was added Canthacol® at a rate of 1 g/kg of feed while diet 7 (T7) was a commercially prepared feed. Twenty eight thirty week-old ISA Brown layer birds were selected from a flock and randomly allocated to seven treatment groups with 2 replicates of two birds each and the diet feeds introduced. Feed intake, weight gain, egg production, egg yolk color, egg weights, egg yolk color acceptability were determined. Eggs from randomly selected outlets of 4 leading supermarkets had their egg yolk colour score determined. The increase in MOLM levels had no effect on feed intake, weight gain, acceptability of boiled eggs by consumers and egg weights ($p<0.05$). The average egg yolk color score and the total eggs laid in the various treatments were significantly different ($p<0.05$) depending on the levels of MOLM in the diets. However, there was no significant difference in egg yolk colour score between the eggs from MOLM diets and those from supermarkets. There is need to investigate further the factors responsible for the yellow-orange colour of the eggs and the possibility of utilization of MOLM in commercial layers feed production.

Key words: *Moringa oleifera* leaf meal, layers birds, feed intake, egg production, egg yolk colour, layers mash

INTRODUCTION

Poultry production performance largely depends on nutrition and environmental factors. Protein supplementation is very important for egg production with the main sources being the soya bean meal and fish meal in Kenya. These two sources are however not always available to farmers because of the high demand from rapidly growing human population coupled with their escalating costs. It has therefore become necessary to look for alternative feed sources that need to be identified and evaluated (Nuhu, 2010). Poultry feed should ideally comprise cereals but this is not possible because there is no surplus of cereals in low income food deficit countries (Gueye and Branckaert, 2002). As such, there need to use other feed resources that can make chicken perform at the same level as when fed on conventional feeds.

Some tropical legume browse plants act as cheap sources of protein but their extensive use is restricted by high crude fibre and antinutritive compounds (Nuhu, 2010). In the recent past, there has been great interest in the use of Moringa (*Moringa oleifera*) as a source of protein for livestock (Makker and Becker, 1997). The leaves of Moringa have components that make them suitable for replacement for soya bean meal or fish meal in non-ruminant diets (Nuhu, 2010). Large amounts of Moringa forage can be obtained from easily established plots in the field without expensive inputs. Moringa is also a perennial plant that can be harvested several times in a year. Leafy tips of *Moringa oleifera*, per 100 g contain 78% water, 268 Kj energy, 9.4 g protein, 1.4 g fat, 8.3 g carbohydrates, 2.0 g dietary fibre, 185 mg calcium, 147 mg magnesium, 112 mg phosphorous, 4.0 mg iron, 0.6 mg zinc and several vitamins including vitamin A, Thiamine, Riboflavin, Niacin, Folate and Ascorbic acid (Grubben and Denton, 2004). Although Moringa leaf meal has very high crude protein, there is not enough information on how it be used as an alternative supplement for laying chicken.

Moringa oleifera is also found to be a very good indigenous source of highly digestible protein, calcium, iron, vitamin C and carotenoids (Fuglie, 1999). *Moringa oleifera* leaves have been found to contain high values of crude protein at 43.5 and 25.1% in extracted and

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