**A**

**RESEARCH PROPOSAL**

**ON THE TOPIC:**

**GROWTH AND MEAT YIELD OF POULTRY FED OF AVACADO LEAF MEAL *(Peasea americana)* AND *Tanjorensis* LEAF EXTRACTS**

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**CHAPTER ONE**

**INTRODUCTION**

* 1. **Background of the Study**

Poultry is a term use to describe any kind of domesticated birds. It can literally be defined as domestic fowls, including; chickens, turkeys, goose and ducks, raised primarily for the production of meat and eggs (The American Heritage, 2009). Firstly, domesticated birds were only limited to chickens, turkeys, goose and ducks, but it has recently expanded to include; quail, pigeon and guinea fowl (The American Heritage, 2009). Globally, the poultry industry benefits the farmer (producer) and by extension contributes to the national economy. It provides a means of livelihood or employment to the populace, source of income to the farmer, source of food (as meat and egg) for the population, source of raw materials for industrial activities, source of foreign exchange via export of products and contributes to the Gross Domestic Product (GDP) of the National economy (Nwafor *et al.,* 2011). The poultry industry is one of the emerging agri-business enterprise that has established its position as the fastest growing segment in the agricultural sector in Nigeria (David, 2002). There is a variety of potentially useful feed materials that could be added to poultry feed in order to improve production and also reduce the spread of d i s e a s e s. One o f s u c h feed material/ingredient is the Avocado seed meal (ASM). Consumption of Avocado (*Persea Americana*) has increased worldwide in recent years. The Avocado seed is obtained from the fruit, which is very nutritious, high in unsaturated fat and at their buttery best when used in raw preparation but when they are cooked for very long periods, their delicate flavor is diminished and in some instance they become bitter (Morton, 1987). Avocado seed contains antimicrobial, antioxidative and a substantial content of nutrients that warrant its trials and utilization in feed formulation. Analysis of normal haematological and growth parameters of chickens is essential for the diagnosis of various pathological and metabolic disorders (Elagib and Ahmed, 2011). The animal feed industry has faced serious challenges as the demand for feeds and raw materials is expected to escalate in order to cope with increasing demand for animal food products. Furthermore, there is also a growing awareness that due to the competition between humans and the animal industry, the existing resources should be drastically reduced. These and other potential drawbacks may hamper the development of poultry production industry. In this global scenario, research aiming at studying new alternative feedstuffs is particularly important. Nevertheless, an information gap is clearly identified for studies where the impact of such feedstuffs is evaluated, especially those containing toxic compounds. Medicinal herb plants have been used to treat a variety of human diseases for centuries, owing to their excellent therapeutic effects and low toxicity. These medicinal herb plants have been used as not only medicines but also as foods, flavors, pigments, and cosmetics for thousands of years in many countries worldwide (Dahanukar *et al.,* 2000; Djeridane *et al.,* 2006). The positive effects of medicinal herb plants suggest the presence of a wide variety of phytochemicals such as phenolics, flavonoids, and tannins, which can play an important role in the prevention and treatment of diseases, owing to their anti-inflammatory, antimicrobial and antioxidant effects (Cho *et al.,* 2003; Choi *et al.,* 2017). In poultry, various medicinal herb plants have contributed to the improvement of productivity, health immunity, nutrient digestibility, excreta noxious gas emission, meat quality, and stabilization of the microflora in the intestinal tract (Lee *et al.,* 2003; Zeng *et al.,* 2015). *Jatropha* extract obtained after extraction, has been characterized as a potential animal feedstuff due to its high crude protein (CP) content and high levels of essential amino acids, except for lysine (Rakshit & Bhagya, 2008). *Jathropha tanjorensis* is a plant that originated in Mexico and spread widely in tropical and subtropical areas including Africa (Dias *et al.,* 2012). The seeds of the plant generally contain toxic components but produce 24 - 40 % oil, rich in palmitic acid (16:0,13.4 - 15.3 %), Oleic acid (18:1, 34.3 - 45.8 %), and linoleic acid (18:2, 29.0 - 44.2 %) (Meher *et al*., 2013). However, its toxicity, mainly attributed to phorbol esters (PE), has hindered its use as animal feed, Studies evaluating its utilization in animal nutrition have been performed using different animal models and plant materials. Negative effects have been observed in goats (Gadir *et al.*, 2003; Katole *et al.*, 2013), sheep (Katole *et al.*, 2011), pigs (Chivandi *et al.*, 2006), and fish (Kumar *et al.*, 2010). El-Badwi & Adam (1992) and El-Badwi *et al.* (1995) reported mortality and severe pathological changes in Brown Hisex chicks. Ekpo and Okon, (2022) reported a positive impact on growing pigs. These results indicate that they may have a wide range of toxicological effects at different levels of intake and that animal species may also respond differently. Hence, there is need to validate the effect of these leaf’s extracts on the growth and yield performance of broiler chickens.

**Problem Statement**

In poultry production, feeding constitutes the highest variable cost, accounting for at least 70% of the total production cost in intensive rearing system. This high cost of feeding is attributed to competition of feed ingredients (especially; maize and soybean) by the human population for consumption and production. Broiler birds requires proper and balanced nutrients (energy, protein, vitamins, minerals and water) to produce quality meat. The feeding of broiler chickens, therefore is a major challenge and a major contributory factor limiting profitability in the broiler industry. Numerous studies have attempted measures to mitigate this production constraint in broiler production (Hassan *et al.,* 2010; Ekpo and Okon, 2022a; Ekpo *et al.,* 2022b; Ekpo *et al.,* 2019). There is therefore, need to evaluates the effects, proximate compositions of these two important feed supplements (avocado and tangoreans meal) on the carcass characteristics of broilers chickens.

**Justification of the Study**

Broiler production is an important enterprise, a major employer of labour, source of income to producers, means of foreign exchange, etc. To boost it production, several strategies has been employed, including; the use of plant extract as supplement in poultry feed. The use of this feed additives to improve the efficiency of growth production, prevent disease and improve feed utilization is a strategy to improve the efficiency of the poultry industry. The leaves have been used for centuries to cure anemia, diabetes, and cardiovascular disorders. It has a long history of use as a medicinal plant in South-Eastern Nigeria, with many locals claiming that it has blood replenishing powers. Avocado leaf and tanjorensis leaf meal is high in beta blockers and anti-cancer compounds, with anti-anaemic, antimicrobial activities, as well as antiplasmodialandanti-oxidant characteristics, which protect against oxidative stress caused by the malaria parasite (Omoregie and Sisodia, 2011). Therefore, there is need to evaluates the effects of these plants extract on the growth and meat yield of broilers chickens as well as their proximate compositions.

**Objectives of the Study**

The objective of this study will be to;

* evaluate the effects of Avocado and tanjorensis meal on carcass characteristics and yield organs weigh of broilers
* determination of the proximate composition of the avocado seed
* evaluation of the potential of avocado seed meal on the performance of broilers

**CHAPTER THREE**

**MATERIALS AND METHODS**

**Experimental Site**

The experiment will be conducted at the poultry Research unit of the Department of Animal Science, Akwa Ibom State University, Obio Akpa Campus, Oruk Anam Local Government Area, Akwa Ibom State. The area lies between latitude 4030’N and 50 00’N and longitudes 700 30’E and 800 00’E. The climate of the experimental site is a tropical rain forest characterized with high temperature (average of 300C), high rainfall (about 1500mm) and relative humidity of 70% on average (SLUS-AK, 1989).

**Experimental materials sourcing and processing**

Leaves and seeds of *Persea americana,* Jathropha *tanjorensis* will be sourced from farms in Obio Akpa or Abak Local Government Area of Akwa Ibom State, Nigeria. The leaves and seeds of the avocado and tanjorensis will be air dried for 24 hours before being chopped into smaller sizes and mixed as supplement in the diet.

**Purchase and Management of Experimental Birds**

A total of one hundred (100) day-old broiler chicks will be used for the experiment. The chicks will be purchased from a hatchery agent; Brilliance Livestock Enterprise in Abak Local Government Area, Akwa Ibom State. The brooding of the birds at the first two weeks will be done at a temperature of 32-35oC to enable feather development by providing adequate heat source. The birds will be managed intensively using deep litter system. Wood shavings will be used as litter material. Feed and water will be provided ad-libitum. The chicks will be vaccinated against the most common diseases such as; Newcastle Disease and Infectious Bursal Disease (Gomboro). They will be acclimatized for one (1) week before the commencement of the experiment.

**Experimental Design**

Completely randomized design (CRD) will be employed for this experiment. On day fourteen (14), the birds will be weighed to obtain their initial weights and divided into four (4) treatment groups. Each treatment group will further be replicated twice and each replicate having ten (10) birds each. Each group will be supplied one of the five experimental starter diets for twenty-one (21) days and experimental broiler finisher diet will be supplied from day 22 to day 42. The treatments will be as follows: Group one: Basal diet only (control), Group two: Basal diet + JLE + AM at 2% inclusion level in-feed, Group three: Basal diet + JLE + AM at 4% inclusion level in-feed Group four: Basal diet + JLE + AM at 6% inclusion level in-feed. The birds will be administered to these treatments for six (6) weeks and data will be collected during the course of the feeding trial.

**Table 1: Experimental composition of broiler starter diet**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ingredients | T1 (0%) | T2 (%) | T3 (1.0%) | T4 (1.5%) |
| Yellow maize | 46.00 | 45.50 | 45.00 | 44.50 |
| PKC | 7.00 | 7.00 | 7.00 | 7.00 |
| Soyabean meal | 15.50 | 15.50 | 15.50 |
| Groundnut cake | 13.00 | 13.00 | 13.00 | 13.00 |
| Fish meal | 7.25 | 7.25 | 7.25 | 7.25 |
| Wheat bran | 4.50 | 4.50 | 4.50 | 4.50 |
| Bone meal | 3.00 | 3.00 | 3.00 | 3.00 |
| Methionine | 0.50 | 0.50 | 0.50 | 0.50 |
| Lysine | 0.50 | 0.50 | 0.50 | 0.50 |
| Vitamin/minerals | 2.50 | 2.50 | 2.50 | 2.50 |
| Salt | 0.25 | 0.25 | 0.25 | 0.25 |
| Avocado seed meal (ASM) | 0.00 | 0.50 | 1.00 | 1.50 |
| Total | 100 | 100 | 100 | 100 |

**Table 2: Experimental composition of broiler finisher diet**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ingredients | T1 (0%) | T2(0.5%) | T3(1.0%) | T4 (1.5%) |
| Yellow maize | 47.50 | 47.00 | 46.50 | 46.00 |
| PKC | 8.50 | 8.50 | 8.50 | 8.50 |
| Soyabean meal | 14.25 | 14.25 | 14.25 | 14.25 |
| Groundnut cake | 11.00 | 11.00 | 11.00 | 11.00 |
| Fish meal | 6.50 | 6.50 | 6.50 | 6.50 |
| Wheat bran | 5.50 | 5.50 | 5.50 | 5.50 |
| Bone meal | 3.00 | 3.00 | 3.00 | 3.00 |
| Methionine | 0.50 | 0.50 | 0.50 | 0.50 |
| Lysine | 0.50 | 0.50 | 0.50 | 0.50 |
| Vitamin/mineral | 2.50 | 2.50 | 2.50 | 2.50 |
| Salt | 0.25 | 0.25 | 0.25 | 0.25 |
| Avocado seed meal (ASM) | 0.00 | 0.50 | 1.00 | 1.50 |
| Total | 100 | 100 | 100 | 100 |

**Proximate analysis of test materials**

Sample of the avocado seed meal (ASM), will be taken to the laboratory for proximate analysis according to methods described by AOAC (2003).

**Table 2; Proximate Analysis Composition**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dry matter | 90.94 | 90.75 | 90.76 | 90.75 |
| Crude protein | 18.34 | 17.50 | 18.34 | 16.63 |
| Ash | 20.22 | 17.62 | 20.08 | 15.78 |
| Ether extract | 2.26 | 2.14 | 2.12 | 2/04 |
| Crude fibre | 7.95 | 7.20 | 7.30 | 7.00 |
| Nitrogen free extract | 42.13 | 46.29 | 42.88 | 49.34 |
| ME(kcal/kg) | 2950 | 3000 | 3010 | 2990 |

**Data Collection**

**Growth Performance**

The weekly weight of each bird will be collected and recorded using a digital weighing scale. The amount of feed and water consumed (feed intake) will be obtained by subtracting the weight of the amount of feed left over in each replicated group from the total amount of feed given. This will be done thrice a day at 8am, 12pm and 5pm. Feed conversion ratio will also be determined by dividing the total feed intake by body weight gain. Body weight gain will be determined by subtracting the initial body weight from the final body weight of the birds.

**Data analysis**

All data collected will be subjected to Analysis of Variance (ANOVA) procedure of Statistical Package for Social Sciences (SPSS 2007). Significant differences will be separated using Duncan’s Multiple Range test (Duncan 1955).

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