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**RESEARCH PROPOSAL**

**ON THE TOPIC:**

**THE EFFECT OF DIETARY LEVELS OF EARTH BALL (*Icacinia manni)* ON CARCASS CHARACTERISTICS OF BROILER CHICKENS**

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**JULY, 2023**

**CHAPTER ONE**

**INTRODUCTION**

* 1. **Background of the Study**

In Nigeria, the most important factor limiting against expansion of poultry industry is the shortage and high cost of feed ingredients, particularly grains (Oluyemi and Roberts, 2000). Udedibie *et al.,* (2004) reported that the use of maize in ration formulation is becoming expensive because of scarcity following increasing pressure on it as staple food for human, feed for livestock and industrial raw materials; thus, there is a concomitant increase in the cost of poultry products. This obviously calls for more research into other non-competitive feed resources. The earth ball could be an alternative choice of raw material for animal nutrition since it is not consumed by man. Earth Ball (*Icacinia manni)* commonly called Efik Isong in Efik. Earth ball is a shrub with modified tuber root which is mainly carbohydrate and is one out of the thirteen species of earth ball plant (Udedibie *et al.,* 2004). It is an all season evergreen shrub with a well-defined root, stem and leaves. According to Umoren *et al.,* (2007) the stem arises from an underground tuber and is round in cross section, thin, straight or branched attaining height varying from 1-2m at maturity. The tubers weigh up to 20kg and vary in shape and colour, depending on the soil type and stage of maturity. The earth ball plant is commonly found in wild field, fallow or wasteland and is abundant in the humid tropical regions of Akwa Ibom and Cross River States of Nigeria (Asuquo and Udedibie, 2012). The tuber contains some anti-nutritional factors such as hydrogen cyanide, alkaloids, phytate, oxalates and tannins which limit its use as animal feed (Effiong *et al.,* 2014). Processing methods, such as toasting (Effiong *et al.,* 2014) and plain water fermentation (Umoren *et al.,* 2007) have been employed in improving the nutritive value of earth ball, allowing for an optimum inclusion level of 15% in broiler diets (Umoren *et al.,* 2007), and 10% in laying birds ration (Umoren *et al.,* 2003). Low utilization of the earth ball meal by birds, despite the various processing techniques employed by these authors could be attributed to high fibre contents of processed meal. Since monogastric animals, including poultry lacks the capacity to digest fibre, it is imperative to utilize processing methods that would reduce the fibre level in the feedstuff. Ekpo and Udedibie, (2012) reported that *Icacinia manni* contains gummy substances that limits or reduces it digestibility when consumed by animals. Umoren *et al.,* (2003) reported as satisfactory growth response by broilers fed *Icacinia manni* fermented with cassava at 15% dietary in inclusion as replacement for maize. Essien, (2021) reported a satisfactory report when examining the effect of *Icacinia manni* meal processed in alum water on performance, carcass, organs, egg quality characteristic, hematological and serum indices of laying hens. To this response, it is imperative to validate the carcass characteristics of broiler birds fed diet fed diet supplemented with Earth ball (*Icacinia manni*), hence, this study.

**1.2 Problem Statement**

The competition for the available feed ingredients between humans, industrial and livestock usage, had resulted in making plant protein sources scarce and very expensive. Additionally, most of the feedstuff are not only expensive but covers a significant percentage in the production phase of livestock and making poultry business less profitable. Typically, poultry farmers are discouraged in venturing into broilers production, because feed covers about 70 percent of the total cost of production and less profitable. The major feed classes for maximum productivity in poultry production needed are energy and protein, which are costly and in competition with humans. Therefore, there is need to look for alternatives energy feed stuff for animal production which is less competitive, increases carcass quality and meat cuts of broiler chicken.

**1.3 Justification of the Study**

The importance of broiler production cannot be overemphasized as it ranges from the provision of employment, a good source of protein to the human population, source of income to local farmers. But this sector is faced with setbacks as feed covers up to 70 percent of the total production cost. In order to maximize profit and to produce for the increasing demand of chicken meat for the population, there is need for farmers to search for alternative energy feedstuff that will produce significant result and less competitive and one of such is sesame seed meal. *Icacinia manni* (Earth ball) seems to have potentials as a source of dietary energy for poultry in Nigeria. *I. manni* is a shrub with modified tuber which is mainly carbohydrate. *I. manni* is one out of the thirteen known species of Icacinia plant. The tuber weights up to 20kg vary in shape and colour depending on the soil type and stage of maturity. It is a common wild field crop; it grows in the forest, fallow or wasted land and is locally abundant in Nigeria especially in the humid climate of Akwa Ibom State making it a better alternative energy feedstuff to consider but it is imperative to examine it effect on carcass traits of broilers chickens.

**1.4 Objective of the Study**

The objectives of this study will be to;

1. evaluate the carcass characteristics of broilers fed diet containing varying level of earth ball (*Icacinia manni*).
2. determine the organ weight of broilers fed diet containing varying level of earth ball (*Icacinia manni*).
3. determine the meat cuts of broilers fed diet containing varying level of earth ball (*Icacinia manni*).

**CHAPTER THREE**

**MATERIALS AND METHODS**

**3.1 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).

**3.2 Source of *Icacinia manni* and Processing Method**

Fresh *Icacinia manni*will be harvested fromfallow land within the University Community. The tubers will be washed, chopped into pieces and sun-dried for four days. The chips will be milled to produce *Icacinia manni*meal.

**3.3. Toxicity, Anti-nutritive (Phytochemical) and Proximate Composition of the Earth Ball (*Icacinia manni)* meal**

Sample of the milled Earth ball (*Icacinia manni)* will be taken to the laboratory for toxicity, Anti-nutritive (Phytochemical) and proximate analysis according to methods described by AOAC (2003).

**3.4 Experimental animals, management and design**

A total of one hundred and twenty (120) 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.

**3.5 Experimental Design**

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 thrice and each replicate having ten (10) birds each. Completely randomized design (CRD) will be employed for this experiment. 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 the 22th to the 60th day. The treatments will be as follows:

Group one: Basal diet only (control)

Group two: Basal diet + EBM (Earth Ball meal)at 0.5% inclusion level in-feed

Group three: Basal diet + EBM (Earth Ball meal) at 1% inclusion level in-feed

Group four: Basal diet + EBM (Earth Ball meal) at 1.5% inclusion level in-feed

The birds will be administered these treatments for eight (8) weeks and data will be collected during the course of the feeding trial.

**3.6 Data Collection**

To evaluate the carcass quality, organ weight and the meat cut of broilers fed *Icacinia manni* (earth ball) meal; on the last day of the experiment, three birds per treatment will be randomly selected, after a 12 hours (overnight) fasting period and thereafter used for carcass traits evaluation. Fasting will help for easy defeathering and evisceration and to also improve carcass quality by elimination of feces and unabsorbed nutrients which might support bacterial growth. Each of the sample birds will be weighed and the starved live weight recorded. The birds will be slaughtered by severing their jugular vein with a sharp knife and blood allowed to drip freely. After the bleeding, the carcasses will be scaled in hot water for about 20-30 seconds. The carcasses will then be defeathered and eviscerated. The internal organs (liver, heart, gizzard. Lungs and intestines) will be removed through silt made between the end of the keel bone and the rectum. The fully-dressed weights of the carcasses will be recorded and the carcass parts and the visceral will be severed and each part weighed. The weight of the dressed carcass and the organs (heart, liver, kidney and gizzard) and abdominal fat will be recorded and expressed as the percentage of the dressed weight of the birds.

**3.7 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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