

**NSAP****47th Annual
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(JOS 2022)****CONFERENCE
PROCEEDINGS**THEME
**SECURING ANIMAL
AGRICULTURE AMIDST
GLOBAL CHALLENGES****ORGANOLEPTIC CHARACTERISTICS OF BROILER CHICKENS CURED WITH
GINGER, GARLIC, AND A MIXTURE OF GINGER AND GARLIC POWDER****Adomeh. E.E**

*Department of Animal Science, Faculty of Agriculture, Ambrose Alli University, Ekpoma, Edo State, Nigeria. Email: *evaadomeh@gmail.com **Phone: 08056349610**

ABSTRACT

This study was conducted to examine the organoleptic characteristics of chicken meat (broiler) products. A total of 16 birds were used for the experiment with four breast muscles for treatment. The design of the experiments was a completely randomized design with T₁ as the control, T₂ Ginger T₃ Garlic, T₄ Mixture of Ginger and Garlic. At the end of the experiment, T₄ had the highest in all the parameters measured, namely, appearance (7.85), tenderness (7.77), juiciness (7.50), flavour (6.62), and general acceptability (7.73) when compared with other treatments. The conclusion drawn is that chicken meat (broiler) processed with the mixture of Ginger and Garlic (T₄) had the highest in all the parameters measured. It is therefore recommended that broiler meat should be processed with Ginger and Garlic in order to have the best result.

Keywords: Organoleptic, Broiler, Processed, Ginger, Garlic, and Chicken.

INTRODUCTION

A man's health is majorly a reflection of what he/she eats. Since it has been noted that the use of antibiotics in chicken meat products has serious health implications because of their residual effects the need for alternative natural feed additives becomes imperative. The potential of natural feed additives like ginger and garlic as a replacement for synthetically produced antibiotics, growth promoters in broilers chicks diet was discovered to be the bioactive substance. Natural feed additives are known to contain bioactive substances like (Oleoresin) which aid the physiological performance of the body and organs of broiler chicks (Zhang, Yang, Wang, Jiang, and Gai, 2009). Also contained in ginger and garlic roots are vitamins, minerals, and enzymes that are capable of boosting the immune system. The fibre in ginger and garlic has been found to improve broiler chick appetite and also serve as a bacteriostatic agent in birds (Zomrawi, Abdel-Atti, Dousa and Mahala 2012). During the processing of chicken meat the use of ginger and garlic could also serve as taste enhancers and in the long run, could improve the quality of the processed meat. Though so many medicinal benefits of ginger root have been discovered by various researchers (Zomrawi *et al.*, 2012) but definite desirable levels of inclusion are yet to be determined and there is a dearth of information on their use (ginger and garlic) either singly or combined as a quality enhancer in broiler chicken meat.

MATERIALS AND METHODS***Experimental Site***

This experiment was carried out in the Animal and Processing Laboratory of Animal Science Department, Faculty of Agriculture, Ambrose Alli University, Ekpoma.

Sensory Evaluation

At the end of the feeding trial, the birds (2 per replicate) were immediately slaughtered and the breast muscles were extracted and then washed before dry curing with salt, ginger, garlic, and the mixture of Ginger and garlic. They were allowed to cure properly before frying. The design of the experiments was a completely randomized design with T₁ as the control, T₂ Ginger T₃ Garlic, T₄ Mixture of Ginger and Garlic. Twenty trained panelists were selected among staff and students in the Faculty of Agriculture, Ambrose Alli University, Ekpoma for the evaluation test. A nine (9) point Hedonic scale of; 1 dislike extremely and 9 like extremely, as described by Larmond (1999), was used. This was compared to the effects of the various treatments. The panelists were told to detect accurately the sensory attributes of processed chicken breast meat with the ginger, garlic, and mixture of ginger and garlic including the identification of appearance, tenderness, flavour, Juiciness, general acceptability, and ranking of samples (Okaka, 2010).



RESULT

The results of the effects of dietary treatments T₁, T₂, T₃, and T₄ on broiler meat are presented in the Table 1. The results showed that meat from birds cured T₂, T₃, and T₄ are not significantly different ($P>0.05$) from the meat of those cured with the T₁ for all the sensory parameters considered in this study except for appearance. Meats obtained from T₁, T₃, and T₄ had significantly higher ($p<0.05$) score than the meats obtained from T₂. Meat products obtained from T₄ had the highest scores for all sensory parameters considered.

Table 1: CHICKEN MEAT (BROILER) PRODUCTS CURED WITH GINGER, GALIC AND MIXTURE OF GINGER AND GARLIC POWDER

Sensory parameters	T ₁ G/G (0%)	T ₂ GRP (2%)	T ₃ GBP (2%)	T ₄ MGGP (1:1%)
Appearance	7.69±0.07 ^a	7.22±0.29 ^b	7.81±0.15 ^a	7.85±0.22 ^a
Tenderness	7.42±0.16	7.56±0.30	7.72±0.15	7.77±0.16 ^{ns}
Juiciness	7.36±0.13	7.29±0.23	7.33±0.16	7.50±0.20 ^{ns}
Flavour	7.56±0.12	7.39±0.20	7.35±0.20	7.62±0.19 ^{ns}
General Acceptability	7.58±0.13	7.44±0.27	7.67±0.20	7.73±0.15 ^{ns}

Mean on the same row with different superscripts are significantly different ($P<0.05$)

G/G = Ginger and Garlic

GRP = Ginger Root Powder

GBP = Garlic Bulb Powder

MGGP = Mixture of Ginger Root and Garlic Bulb Powder.

DISCUSSION

The results of the sensory evaluation of the current study showed that there is no significant difference ($P>0.05$) among all the treatments for all the sensory characteristics examined. However, broiler meat processed with a mixture of ginger and garlic powder had the highest scores for all the sensory characteristics. This was followed by garlic alone, then ginger alone while the control had the least scores for all the sensory characteristics examined during the experiment. The results of this experiment conformed to the report of Teye, *et al.* (2015). The above Authors had reported that broiler meat from broiler chicken fed diets containing palm kernel oil residues showed no significant difference in appearance, flavour (odour), juiciness, tenderness, and general acceptability. According to Teye, *et al.* (2015), visual appraisal of products is one of the most important characteristics of food, because it determines whether a consumer will choose or reject the food products. Several types of research confirmed that the acceptability of meat is a function of its colour (Van Oeckel *et al.*, (1999); Bell and Weaver, (2002)). Colour is a major indicator of the quality of meat, as appearance influences consumer acceptance. The similarity in colour of the products from this study is an indication that ginger, garlic, and a mixture of ginger and garlic powder, did not negatively affect the colour of the meat. Flavour (odour) is another important sensory parameter that consumers consider when making purchasing decisions (Teye, *et al.*, 2015). Consumers always select against products possessing offensive odour while being attracted to those with good odour. Salmon *et al.* (1984) reported that the frequency of off-flavor increased ($P<0.05$) when broilers were fed diets containing 5% herring fishmeal and this adversely affected product patronage. The results from this study also indicated that there was no significant difference in Juiciness of the various treatments. Juiciness in meat arises from moisture released by meat during chewing, and moisture from saliva (Howard, 1976; Christensen *et al.*, 2000). Juicier meat appears more palatable than less juicy ones (Teye, *et al.* 2015).

Tenderness is another characteristic that is directly related to juiciness, thus tender meat will normally release juices during chewing, compared with tougher meat. Several studies are of the view that when the sensory characteristics of meat products vary significantly from what the consumers are used to in a given product,

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there is the likelihood of the consumers rejecting the meat product (Lawrie and Ledward, 2006; Warris, 2010; Teye, *et al.*, 2011). Therefore, the results of the present study on sensory characteristics of broiler chicken fed with ginger and garlic relative to those on the control diet, suggested that ginger or garlic or the mixture of ginger and garlic powder as additives in broiler rations have no adverse effect on the sensory characteristics of the meat but rather enhance the performance.

CONCLUSION AND RECOMMENDATION

From the above study, it can be concluded that the sensory evaluation of the meat-type chicken confirmed that meat processed with a mixture of ginger and garlic powder had the highest score for all the parameters considered and the processing method was therefore recommended for use in order to get the best result.

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