

SENSORY CHARACTERISTICS OF NATIVE CHICKEN QUEEN PINEAPPLE-CURED HAM

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ABSTRACT

The potential of Native Chicken to be processed into palatable ham was conducted making use of Queen Pineapple (QP) crude extract as one of the curing ingredients. Primarily, the main goal is to develop a protocol in the manufacture of processed native chicken ham and determine the organoleptic quality of native chicken ham product. The age of the bird and maturity of the fruit were considered for the best organoleptic quality of chicken ham. In this study, the combine injection and dry cure (CIDC) method of the conventional formula was adopted. The desired amount of QP crude extract was first determined for the pump pickle. Curing salt was used for the control while different volume of pineapple crude extract was used in two treatments.

The protocols for processing native chicken were developed using slaughter native chicken, and QP crude extract as curing ingredient for ham making. Color, flavor, juiciness and tenderness were among the desirable characteristics considered in this study. The sensory evaluation by trained panelists on QP-cured ham samples demonstrated comparable results. All the cooked meat samples were apparently acceptable to the sensory panel. The mean scores for flavor, juiciness and tenderness of meat samples have slight differences; however, they are not statistically significant.

Indeed, native chicken can be processed into palatable ham with queen pineapple (Formosa variety) extract that served as curing ingredient, flavor enhancer and tenderizer. Native Chicken QP-Cured ham is a commendable value-added product for both native chicken and queen pineapple by-products (butterball size).

Keywords: Native chicken, organoleptic characteristics, crude extract, ham curing.

Abbreviations: QP-queen pineapple, CIDC-combine injection and dry cure.

INTRODUCTION:

Native chicken nowadays has gained popularity because of its health benefits and flavorsome meat. Many Filipinos are becoming health conscious and preferred to eat lean meat and organically-grown foods as stated by Sumague (2009) in her research on “Food Quality Evaluation of Native Chicken”. That, if native chicken be given benefits, the Department of Agriculture (DA) said - products from native animals can command premium prices. In Camarines Norte, native chicken breeds consisted of “Camarines Strain” and “Batangas Strain”, backyard free-ranged and being sold live in the local market amounting to Php 150 and Php 175 per kilo if dressed. The fact that native chicken has a simple flavor, the meat is less tender as compared to broilers. However, the unique taste, flavor and other preferred attributes made consumers pay premium price for native animal products. On the other hand, Queen Pineapple (*Ananas comusus* (Linn.) Merr) or locally known as Formosa, is abundantly cultivated in Camarines Norte and considered as one of the sweetest variety of pineapple in the Philippines. It is commonly used as desserts and great snacks to eat right away. The sizes of the fruit vary from large, medium, small and butterball. The butterball size is usually sold at a lesser price and comprises almost 15-20% of the total production (DA 2008). Butterball size will be utilized as one of the raw materials of the study. Normally, pineapple juice is being used as marinade or in cooking pork and/or chicken ham. In this study, queen pineapple crude extract was utilized as curing ingredient in pump pickle, flavor enhancer and tenderizer. Hence, this research on the potential of processed QP-cured native chicken ham, a value-added product was conducted that will support both the queen pineapple and native chicken industry. Definitely will, significant reduction on postharvest loses in queen pineapple particularly the butterball size. A viable product that will offer the consumers a ready-to-cook and ready-to-eat convenience, flavorful and tender native chicken ham.

**MATERIALS AND METHODS:
SOURCE OF RAW MATERIALS:**

The raw material for ham was taken from the Slaughter Native Chicken Project of CNSC Labo Campus, Talobatib, Labo, Camarines Norte (Fig. 1A). The age of the bird was considered for the best result on the organoleptic quality of ham. Butterball size queen pineapple was purchased from the local market and from the Queen Pineapple Production Project of the college (Fig. 1B). The maturity of the fruit was also considered for crude extract for best sensory quality of the cured-ham product.

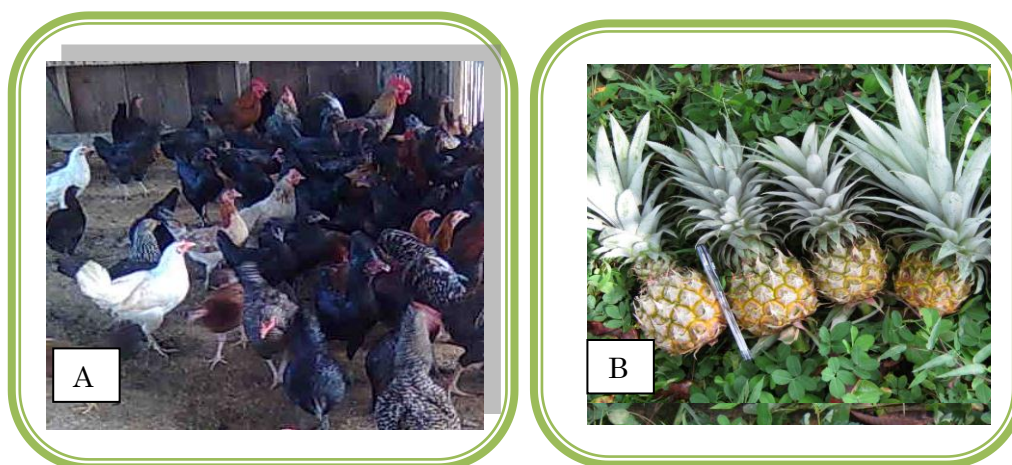


Figure 1A, B. Native Chicken and Butterball size queen pineapple

**DEVELOPMENT OF PROTOCOL FOR THE MANUFACTURE OF PROCESSED:
NATIVE CHICKEN QP-CURED HAM:**

The protocol adapted for native chicken QP-cured ham was based from ham curing by Argañosa and Obsioma (2004). However, modifications were made basically on the substitution of curing salt with QP crude extract. The optimum volume of QP crude extract was determined during the preliminary trials conducted.

Preparation of QP extract. Fresh pineapples, butterball size were washed, peeled de-eyed and crushed. Homogenization was done by chopping the flesh/pulp in a blender at a minimum speed for 20 seconds; and,

strained using cheesecloth to further filter and get a clear supernatant that was used for injection as cure and tenderizing agent for slaughter native chicken.

Preparation of meat samples. The three (3) freshly dressed native chickens were cleaned and chilled first for 24 hours. Thoroughly washed, lungs and kidney at the backbone were totally removed and allowed to drip for about 15 minutes.

Preparation of curing ingredients. The amount of curing ingredient was modified and computed based on the conventional formula of ham curing adopted by Argañosa (2004) in combine injection and dry cure (CIDC) method. All the ingredients in dry cure for rubbing were combined. The solid ingredients for pump pickle for injection were prepared and dissolved in pineapple crude extract. Disposable syringe was used for injection of pump pickle.

Ham curing. The pump pickle solution was injected to the meaty part of native chicken using a syringe as shown in Figure.2.



Figure 2: Injection of queen pineapple pumping solution into meat sample.

The dry cure mixture was gently rubbed to the whole body of native chicken and packed in stokinette. The samples were placed in a bowl and kept at room temperature for two (2) hours then transferred to chilling temperature for 3 to 5 days curing process. Curing period was terminated after 5 days. Then washed and packed. Keep frozen.

Cooking Native Chicken Ham:

Desired amount of brown sugar was prepared for caramelization of the samples. After which, the native chicken ham was cooked in the prepared ham sauce for about 30 minutes or until tender. Packed in polyethylene bag.

DETERMINATION OF ORGANOLEPTIC QUALITY OF PROCESSED NATIVE: CHICKEN QP-CURED HAM THROUGH SENSORY EVALUATION:

In this study, three dressed native chicken was assigned for the three treatments and replicate. There were three sessions held.

Sensory evaluation used native chicken meat cured with different volume of pineapple crude extract were used as the treatment.

The known weight of dressed native chicken was randomly assigned to one of the three treatments. Distilled water with sodium nitrate was injected for Treatment 1 or the control. Different amount of queen pineapple pumping solution was injected to Treatment 2 and 3.

The prepared dry cure mixture was then rubbed thoroughly on the whole body of native chicken. All the meat samples were held for two (2) hours at room temperature then kept at chilling temperature. Curing process took place from 3-5 days at a temperature of 2-4 °C (30-40 °F). Overhauling was done to ensure equal chance of curing the product. At the end of the curing period, the meat samples were thoroughly washed in running water

to remove the adhering salt on the skin. Then, drained in a colander, packed in polyethylene bag and kept refrigerated (frozen) until ready for cooking.

Preparation of QP-Cured Native Chicken For Cooking:

Cured samples were caramelized and cooked by boiling in the prepared ham sauce (Fig. 3 A,B). The cooked meat samples were slightly cooled before slicing them into desired size for sensory evaluation.

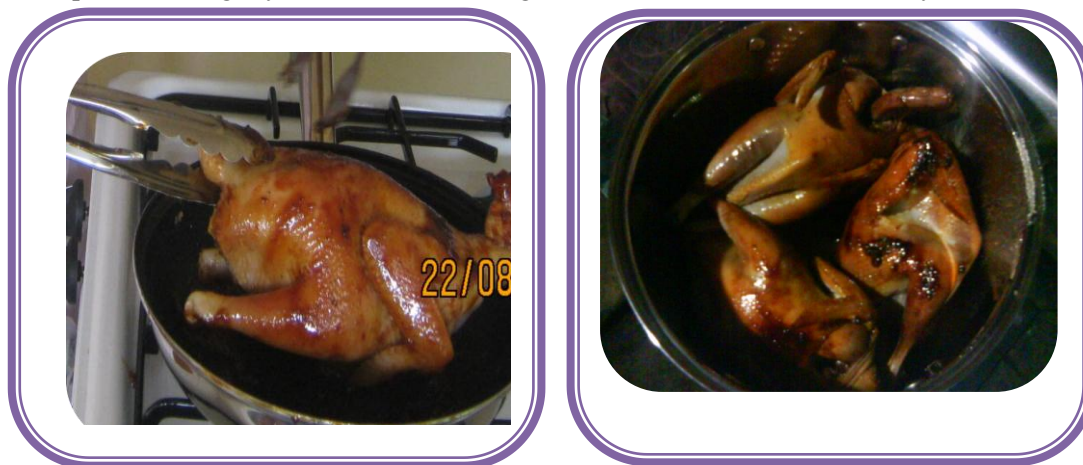


Figure 3: A, B: Caramelization and boiling of native chicken ham

Sampling method:

The cured samples were cooked until the internal temperature of 75 °C was attained. The cooked samples were carefully cooled before slicing them into 2.0 x 2.0 x 1.0 cm³. There were five (5) trained sensory panelist who evaluated the product according to color, flavor, juiciness, tenderness and general acceptability using the 5-point hedonic scale. Sensory evaluation was conducted thrice.

Statistical Analysis:

The effect of queen pineapple extract on the organoleptic characteristics of cooked native chicken ham as determined by the panelist was analyzed through the evaluation of the sensory attributes using the ANOVA in RCBD with DMRT to compare the means.

RESULTS AND DISCUSSION:

DEVELOPMENT OF PROTOCOLS IN THE MANUFACTURE OF SLAUGHTER NATIVE CHICKEN QP-CURED HAM:

The protocols developed were adapted from ham curing by Argañosa and Obsioma (2004). Modifications on the curing process and substitution of ingredient was done in this study to complement with the raw material used. The optimum amount of QP crude extract was determined during the preliminary trials conducted.

Preparation of QP extract. Wash, peel and de-eyed butterball size QP. Crush or chop the flesh/pulp and squeeze using cheesecloth to extract the juice and measure. This will be used as one of the curing ingredients in pump pickle.

Preparation of meat samples. Wash and clean the dressed native chicken then chilled for 24 hours. Then, the remaining lungs and kidney were thoroughly removed at the backbone. This is done to avoid foul smell and bacterial contamination. Trimmed meat samples were allowed to drip for about 15 minutes. The weight of the samples was recorded for the computation of the dry cure and pump pickle for injection.

Preparation of Curing Ingredients. Measure all the ingredients for dry cure and pumping pickle solution based on the trimmed weight of samples. Place in a bowl separately. Dissolve by stirring the pumping pickle solution to facilitate injection. In the preparation of QP extract, the fruit must be fresh and free from bruises so as to avoid rapid rancidity and contamination of the meat samples.

Ham Curing. Inject to the meaty part of chicken the prepared pump pickle solution. Afterwards, rub gently the dry cure mixture to the whole body of native chicken. Pack in stokinette and keep at room temp for 2 hours; then transfer at chilling temperature for 3 to 5 days curing process in order to hold the shape of the sample. This is done to avoid contamination of the meat during the curing process. Terminate after 5 days of curing. Wash and pack. Keep frozen.

Cooking Native Chicken Ham. Wash the meat thoroughly to remove adhering salt on the skin. Drain. Caramelize (Fig. 4A). Boil in the prepared ham sauce until done. Cooking time is about 30 minutes or until tender. Serve.

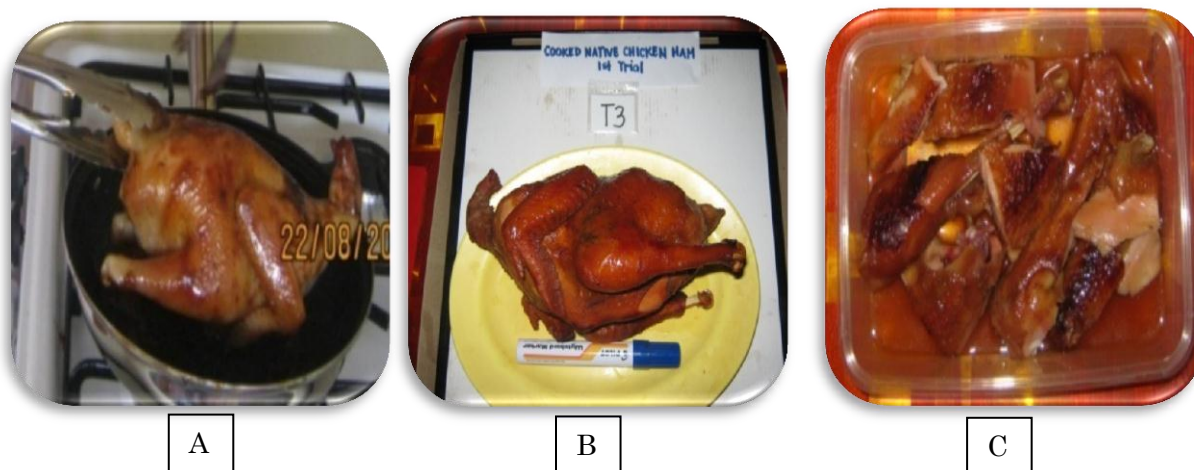


Figure 4 A,B, C. Caramelized, and cooked native chicken ham

The cooked and ready to eat ham (Fig.4B,C) can be packed in sanitary polyethylene bag and keep refrigerated and frozen until ready for consumption.

DETERMINATION OF ORGANOLEPTIC QUALITY OF PROCESSED NATIVE: CHICKEN QP-CURED HAM THROUGH SENSORY EVALUATION:

Color, flavor, juiciness and tenderness are among the desirable characteristics of meats. The sensory evaluation by trained panelists on QP-cured meat samples demonstrated comparable results. The mean scores for flavor, juiciness and tenderness of meat samples shown in Table 1 have slight differences; however, they are not statistically significant. All the cooked meat samples were apparently acceptable to the sensory panel. This result is parallel to the study of Sumague (2009) that the aroma, color and structure of all the chicken samples (broiler and native chicken) scored an average mean score with no significant differentiation.

Table 1. Organoleptic qualities of cooked native chicken QP-cured ham

PARAMETER	Control	15 ml QP extract	30 ml QP extract
Color	4.53	4.33	4.33
Flavor	4.07	4.47	4.13
Juiciness	4.13	4.27	4.47
Tenderness	4.07	4.20	4.40
General Acceptability	4.33	4.47	4.53

^{ns} = not significant

The study showed that native chicken treated with and without curing salt were not significantly different. Native chicken can be processed into palatable ham using queen pineapple (Formosa variety) extract as one of the curing ingredients. Borchert and Cassens (1998) stipulated that caution is needed when using pure saltpeter instead of commercially prepared mixes, since accidental substitution of saltpeter for table salt in recipes can result in lethal toxic levels. He further stressed that the use of nitrates in food preservation is controversial. This

is due to the potential for the formation of nitrosamines when nitrates are present in high concentrations and the product is cooked at high temperatures. The usage of either compound is therefore regulated.

Mild cures on the other hand, according to Busboom (1997) are most preferred by consumers which utilizes a small amount of salt to retain the poultry flavor. Relatively, some current recipes for curing are utilizing vinegar, citrus juice, or alcohol as ingredients for flavor. Pariza (1997) pointed out that the cure ingredients can be rubbed on to the food surface, mixed into foods dry (dry curing), or dissolved in water (brine, wet, or pickle curing). Normally, pineapple juice is used only as marinade and/or in cooking pork ham or chicken ham. The use of queen pineapple crude extract in this study as curing ingredient, and tenderizer resulted to a very commendable ham product from native chicken.

This result is a value-added product to both native chicken and butterball size queen pineapple. The computed cost of one (1) native chicken pineapple-cured ham is Php 220.00. It will provide livelihood to poultry raisers. Similarly, the post harvest loses in queen pineapple will be reduced through the production of purified curing extracts.

SUMMARY, CONCLUSION AND RECOMMENDATION:

The protocols developed in the manufacture of native chicken QP-cured ham include the following: preparation of queen pineapple crude extract, preparation of dressed chicken, preparation of curing ingredients, ham curing, and cooking native chicken ham.

The sensory evaluation by trained panelists on QP-cured meat samples demonstrated comparable results. All the cooked meat samples were apparently acceptable to the sensory panel. The study showed that native chicken treated with and without curing salt were not significantly different. Native chicken can be processed into palatable ham using queen pineapple (Formosa variety) extract as one of the curing ingredients. The computed cost of one (1) native chicken pineapple-cured ham is Php 220.00.

This study will provide livelihood to poultry raisers. Faylon (2009) specified that going into native chicken production, creates employment opportunities not only for chicken raisers but also for traders and others engaged in the chicken-based food business. Likewise, the post harvest loses in queen pineapple will be reduced through the production of curing extracts thus value adding to butterball size Queen Pineapple.

Further studies on the storage stability of native chicken ham can be conducted to determine the shelf-life of fresh and cooked “ready” to eat native chicken ham for future commercialization of ham product. Mature hen or cockerels can also be tried to be processed into tender ham adopting this protocol and find out if the same organoleptic characteristics will be derived. Lastly, pasteurized pineapple extract may be utilized for a tender ham product from mature hen or cockerel.

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