



De La Salle University – Dasmariñas
GRADUATE PROGRAM

**FOIE GRAS PRODUCTION UTILIZING LOCAL BREEDS OF DUCKS FED
WITH LOCALLY AVAILABLE HIGH ENERGY FEEDSTUFFS**

**A Master's Thesis
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the Faculty of the Graduate School of Education, Arts and Sciences
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**In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Biology**

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ABSTRACT

Name of Institution: De La Salle University – Dasmariñas

Address: Dasmariñas, Cavite

Title: **Foie Gras Production Utilizing Local Breeds of Ducks
Fed With Locally Available High Energy Feedstuffs**

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STATEMENT OF THE PROBLEM:

The study investigated the potential use of local breed of ducks fed with different high energy diets for foie gras production. Specifically it sought to answer the following questions:

1. What is the best breed of Philippine duck and the best high energy diet combination that can produce high quality foie gras in terms of:
 - a. gross liver morphology (volume, weight and color and surface lesion)
 - b. chemical analysis (moisture content, percent crude fat on dry and fresh weight basis)
 - c. histology (presence of lipid droplets)



2. Is local foie gras production utilizing local breeds of ducks fed with locally available high energy feedstuff economically feasible in terms of:

- a. demand
- b. production cost
- c. sales
- d. return of investments

SCOPE AND COVERAGE

The study focused on the feasibility of local foie gras production utilizing local breeds of ducks fed with high energy feedstuffs. The study aimed to determine the type of duck breed and the type of feed that will produce acceptable foie gras in the market.

METHODOLOGY

The study made use of 60 male ducks from three local breeds (Pekin Ducks, Philippine Muscovy, and Khaki Campbell) that were force-fed with high energy diets (corn, taro, cassava) for 14 days. The birds were kept in individual cages to ensure minimal movement. Feeding behavior was restricted by the limited space in individual cages to ensure maximum fat deposit in the liver. Weekly variations on weight increase and mortality was noted. The liver was examined for gross morphological characteristics



(weight, volume, color and lesions). Histological differences according to the presence of lipid droplets were assessed. Fat content was measured by the Soxhlet crude fat extraction analysis. A feasibility survey was conducted among the leading hotels and gourmet restaurants in Metro Manila to evaluate the economic feasibility of foie gras production utilizing local breeds of ducks fed with high energy feedstuffs.

RESULTS AND CONCLUSION

The type of duck breed did not influence (>0.05) the liver volume of ducks fed high energy feedstuff where ducks fed cassava have obtained the biggest volume of liver. The interaction of the two factors (breed x feed) have significantly ($P<0.01$) affected liver weight where ducks fed cassava have obtained the heaviest liver. The type of breed and the high energy feedstuff have significantly ($P<0.05$) affected the amount of moisture in the liver. Philippine Muscovy ducks fed commercial ration have obtained the highest moisture while Khaki Campbell ducks fed cassava have obtained the lowest. There is a significant ($P<0.05$) interaction between the type of breed and high energy feedstuff in both fresh weight and dry weight basis where Khaki Campbell ducks fed cassava have obtained the highest percent crude fat. Histological examination of the liver reveals that ducks fed with cassava have achieved macrovesicular steatosis along the first and third hepatic zone. Some Pekin ducks and Philippine Muscovy ducks fed with cassava have



shown signs of local hemorrhaging along the smooth surface of the liver. This could be because of the Orotic acid content of cassava which blocks the glycosylation of triglycerides therefore preventing VLDL synthesis.

Khaki Campbell ducks fed with cassava have obtained the lowest cost of production (PhP 343.33) but Pekin ducks fed cassava have reached the highest return of investment (87.63%) in just 14 days.

Local foie gras production utilizing local breeds of ducks fed with high energy feedstuffs is highly feasible. This is backed by the high amounts of fat deposited in the liver and the acceptable condition of the liver. The input of materials, demand and return of investments also indicate that local foie gras production will face a good market.

RECOMMENDATIONS

Breed selection and development could be done to enhance the capacity of Khaki Campbell ducks and Pekin ducks to be more adapted to fatty liver production. The mechanization of feeding could be done to facilitate and cut off feeding time. The Orotic acid profile of cassava could be screened to determine its potential for foie gras production.



TABLE OF CONTENTS

TITLE PAGE	1
ABSTRACT	2
APPROVAL SHEET	6
ACKNOWLEDGEMENT	7
TABLE OF CONTENTS	11
LIST OF TABLES	14
LIST OF FIGURES	15
LIST OF PLATES	16
CHAPTER	
1	
THE PROBLEM AND ITS BACKGROUND	
Introduction	18
Conceptual Framework	21
Statement of the Problem	23
Hypothesis	25
Scope and Delimitation of the Study	25
Significance of the Study	26
Definitions of Terms	27
2	
REVIEW OF RELATED LITERATURE	
Conceptual Literature	30
Research Literature	41



	Synthesis	43
3	METHODOLOGY	
	Animals	45
	Housing of Animals	45
	Experimental Design	46
	Statistical Treatment of the Data	50
4	PRESENTATION, ANALYSES AND INTERPRETATION OF DATA	
	General Observations	52
	Problem Number 1	61
	Problem Number 2	73
5	SUMMARY, CONCLUSION AND RECOMMENDATION	81
	LITERATURE CITED	85
	APPENDICES	
A	Khaki Campbell Ducks	90
B	Philippine Muscovy Duck	91
C	Pekin Duck	92
D	Corn	93
E	Taro	94
F	Cassava	95
G	Duck Individual Housing	96



H	Duck Foie Gras	97
I	Standard H & E Stained Fatty Liver	98
J	Commercial Feed Proximate Analysis	99
K	Manual Force Feeding	100
L	Duck Bucal Cavity	101
M	H & E Histology Protocol	102
N	Crude Fat Analysis	103
O	Freshly Harvested Liver from Ducks Fed with High energy Feedstuff for 14 days	105
P	ANNOVA Table for Approximate Liver Volume	108
Q	ANNOVA Table for Liver Weight	109
R	ANNOVA Table for Percent Moisture	110
S	ANNOVA Table for Crude Fat Fresh Weight Basis	111
T	ANNOVA Table for Crude Fat Dry Weight Basis	112
	CURRICULUM VITAE	113



LIST OF TABLES

TABLE	PAGE
1 Nutrient Composition of High Energy Feedstuffs (as fed basis) (PHILSAN, 2003)	34
2 Housing Systems During Force Feeding Period (SCAHAW, 1998)	36
3 Experimental Groups and the Corresponding Treatments For Each	46
4 Morality Rate of Ducks Fed High Energy Feedstuffs for 14 days	59
5 Time of Mortality of Ducks Fed High Energy Feedstuffs For 14 days	60
6 Surface Lesions of Liver from High Energy Feedstuffs	65
7 Foie Gras Demand ("The Champagne Room", Manila Hotel)	74
8 Investment Projection of Imported Foie Gras	75
9 Cost of Foie Gras Production Based on the 14 Days Force Feeding Period	76
10 Projected Sales of Foie Gras and Carcass	78
11 Return of Investment (Stock and Feed)	80



LIST OF FIGURES

FIGURE	PAGE
1 Factors contributing to quality foie gras production	23
2 Flowchart of Treatment Administration	49
3 Change in Body Weight of Ducks Fed Corn, Taro Cassava and Commercial Feed Ration from day 1 to day 5	55
4 Change in Body Weight of Ducks Fed Corn, Taro Cassava and Commercial Feed Ration from day 5 to day 10	56
5 Change in Body Weight of Ducks Fed Corn, Taro Cassava and Commercial Feed Ration from day 10 to day 14	57
6 Approximate Liver Volume (cm ³) of Ducks Fed Corn, Taro, Cassava and Commercial Feed Ration for 14 days.	63
7 Liver Weight (g) of Ducks Fed Corn, Taro, Cassava and Commercial Feed Ration for 14 Days	64
8 Amount of Moisture in the Liver of Ducks Fed with Corn, Taro, Cassava and Commercial Feed Ration for 14 days	66
9 Crude Fat (Fresh Weight) of Ducks Fed Corn, Taro, Cassava, and Commercial Ration for 14 days	68
10 Crude Fat (Dry Weight) of Ducks Fed with Corn, Taro, Cassava, and Commercial Feed Ration for 14 days	69



LIST OF PLATES

PLATE	PAGE
1 Duck Exhibiting Depression After 14 Days of Force Feeding with High Energy Diets Composed of Corn Taro, Cassava and Commercial Duck Ration	53
2 Presence of Oxidized Red Blood Cells in the Feces of (A) Philippine Muscovy Fed Corn and (B) Pekin Duck fed Cassava	53
3 Pekin Duck Exhibiting Wet Neck and Poor Feathering After 14 Days of Force Feeding With High Energy Feedstuffs Such as Corn, Taro, and Cassava	54
4 Excessive Fat Along the Peritoneal Cavity (EF= Extrahepatic Fat) of Ducks Fed High Energy Diet for 14 Days	59
5 Liver With Lesion from (A) Pekin Ducks and (B) Philippine Muscovy Both Fed with Cassava	65
6 Liver Histology (40 x 1.4) of Different Breeds of Ducks (Khaki Campbell – Plate A, D, G, J; Philippine Muscovy – Plate B, E, H, K; Pekin Duck – Plate C, F, I, L) Fed High Energy Diets (Commercial Ration – Plate A, B, C; Corn – Plate D, E, F; Taro – Plate G, H, I; and Cassava – Plate J, K, L) for 14 days	71
7 Liver Histology (100 x 1.4) of Different Breeds of Ducks (Khaki	



Campbell – Plate A, D, G, J; Philippine Muscovy – Plate B, E,
H, K; Pekin Duck – Plate C, F, I, L) Fed High Energy Diets
(Commercial Ration – Plate A, B, C; Corn – Plate D, E, F;
Taro – Plate G, H, I; and Cassava – Plate J, K, L) for 14 days

72

