De La Salle University – Dasmariñas
GRADUATE PROGRAM

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

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Master of Science in Biology

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ABSTRACT

Name of Institution: De La Salle University – Dasmariñas

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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.

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