

RESEARCH ARTICLE

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QUACK FUEL: OPTIMIZING NUTRITION FOR LOCAL MALE DUCKS

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Abstract

This study investigates the effects of supplementing torch ginger flower extract in commercial feed on the nutrition and health of local male ducks. Torch ginger (*Etlingera elatior*) is known for its potential health benefits due to its rich phytochemical content. Male ducks were fed with commercial feed enriched with torch ginger flower extract, and their growth performance, nutrient utilization, and health parameters were evaluated over a specified period. Results indicate promising outcomes in terms of improved nutrition and health markers among the ducks fed with the supplemented feed. This research sheds light on the potential of torch ginger flower extract as a dietary supplement for enhancing the nutrition of local male ducks and warrants further exploration in poultry nutrition.

Keywords Local male ducks, Torch ginger flower extract, Commercial feed, Nutrition, Health, Dietary supplement.

INTRODUCTION

Duck farming plays a significant role in many agricultural economies worldwide, providing a valuable source of protein-rich meat and eggs. In optimizing duck production, enhancing nutrition and health parameters of ducks are crucial objectives for farmers and researchers alike. The quest for innovative dietary supplements to improve the nutritional quality of duck feed has led to exploration into natural additives derived from plants with potential health benefits.

One such natural supplement of interest is torch ginger (*Etlingera elatior*) flower extract. Torch ginger, a member of the ginger family, is renowned for its culinary and medicinal uses in various cultures. Rich in bioactive compounds such as flavonoids, phenolic acids, and essential oils, torch ginger exhibits antioxidant, antimicrobial, and anti-inflammatory properties, making it a promising candidate for enhancing animal nutrition.

Among various categories of ducks, local male ducks hold particular importance due to their meat quality, adaptability, and cultural significance in

many regions. To optimize the nutrition and health of local male ducks, it becomes pertinent to explore novel dietary strategies such as supplementing their feed with torch ginger flower extract.

This study aims to investigate the potential benefits of incorporating torch ginger flower extract into commercial duck feed for local male ducks. By evaluating growth performance, nutrient utilization, and health parameters, we seek to elucidate the impact of torch ginger supplementation on the overall well-being and productivity of local male ducks.

Understanding the effects of torch ginger supplementation on duck nutrition not only contributes to the advancement of poultry science but also offers practical insights for duck farmers seeking sustainable and natural methods to improve the quality of their flock. Through this research, we aim to bridge the gap between traditional knowledge and modern agricultural practices, harnessing the potential of natural resources to optimize duck production systems.

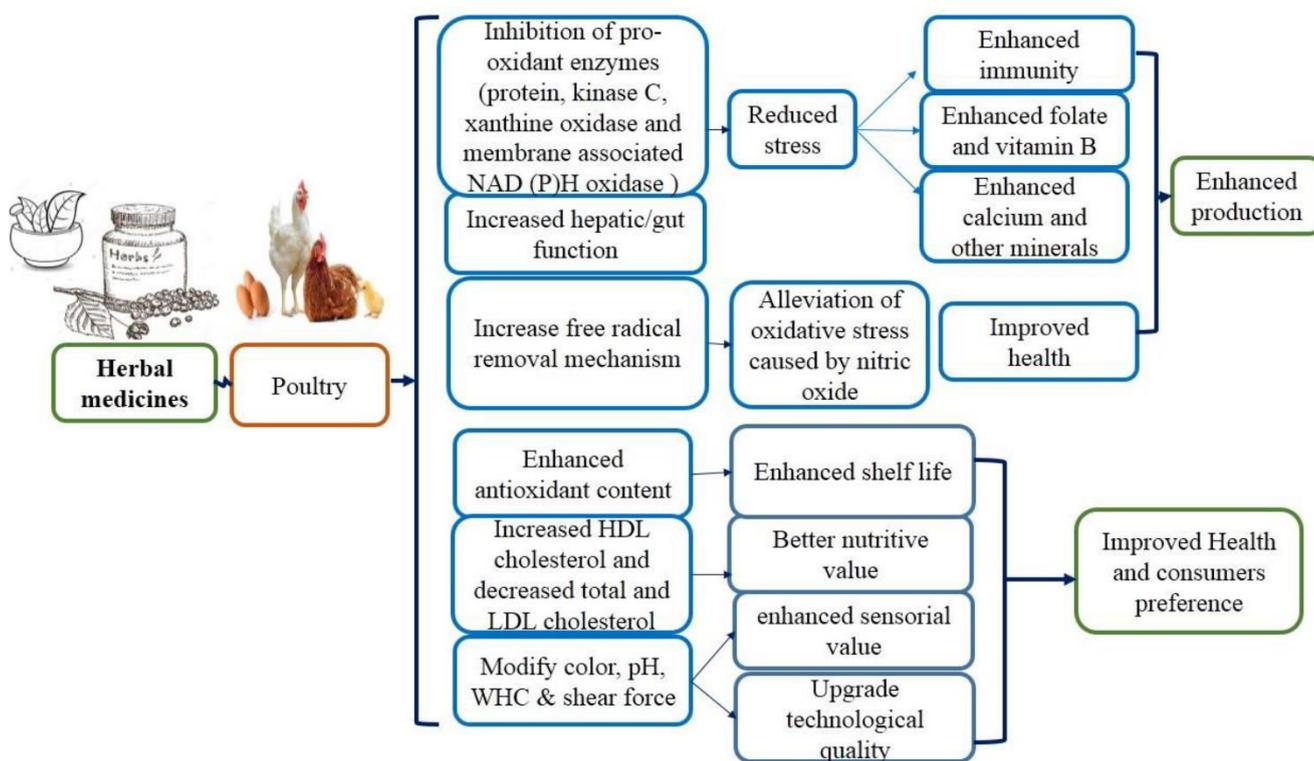
METHOD

The process of enhancing local male duck nutrition with torch ginger flower extract in commercial feed involves several key steps to ensure effective supplementation and evaluate its impact on duck health and productivity. Firstly, the selection of local male ducks from a representative population ensures the study's relevance and applicability to real-world farming conditions. These ducks are chosen based on criteria such as age, weight, and general health to establish a homogeneous study group.

Following duck selection, the experimental design is crucial for the controlled investigation of torch ginger supplementation. Randomized controlled

trials allocate ducks into treatment and control groups, facilitating comparisons between ducks receiving standard commercial feed and those receiving feed enriched with torch ginger flower extract. This design helps to elucidate the specific effects of the supplementation regimen on duck performance and health outcomes.

The preparation of torch ginger flower extract involves meticulous extraction methods to obtain a concentrated and standardized product. Fresh torch ginger flowers are harvested, cleaned, and processed to isolate the bioactive compounds responsible for the plant's potential health benefits. Extraction techniques, such as solvent extraction or decoction, ensure the efficient extraction of phytochemicals while maintaining product integrity and safety.



Once the torch ginger flower extract is prepared, it is incorporated into the commercial duck feed at predetermined concentrations based on preliminary studies and recommended dosages. Thorough mixing of the extract with the feed ensures uniform distribution of the supplement,

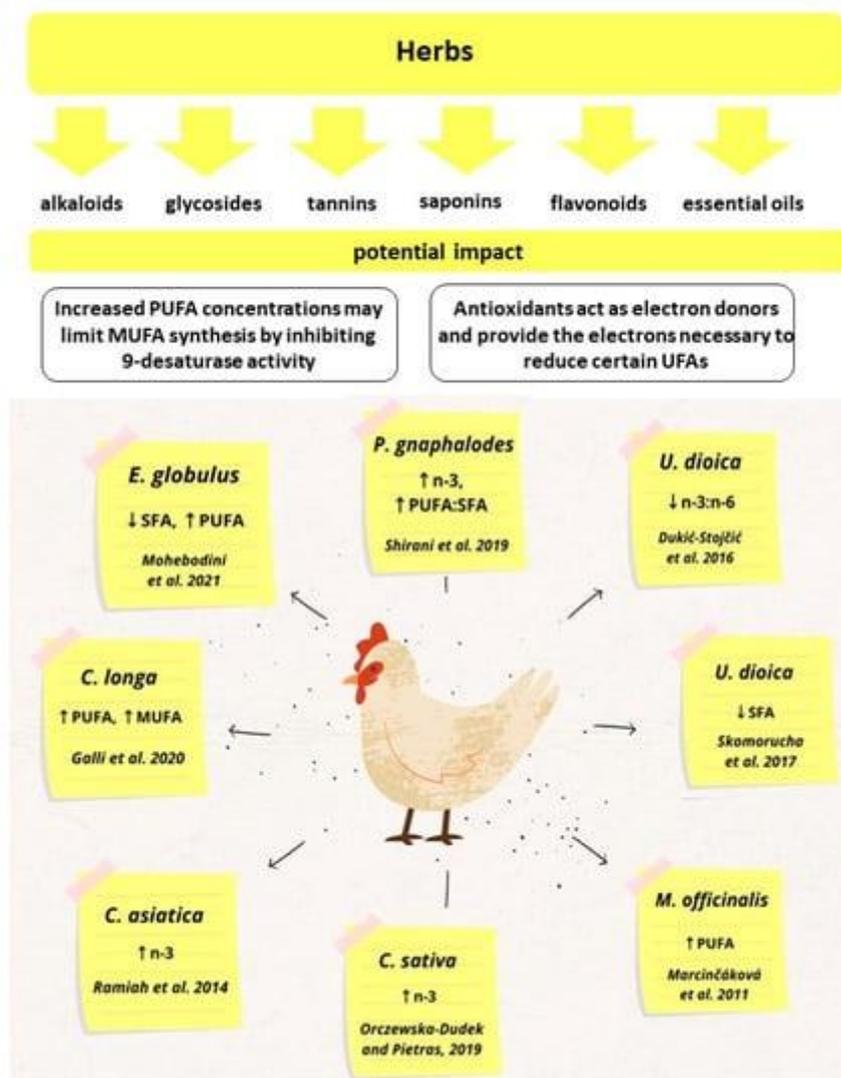
guaranteeing that ducks receive consistent doses throughout the supplementation period.

During the feeding regimen, ducks are provided ad libitum access to their respective feed formulations, allowing for natural feeding behaviors and intake patterns. Regular monitoring

of feed intake, body weight, and other growth performance parameters enables researchers to track the progress of the supplementation trial and assess its impact on duck nutrition and productivity over time.

Local male ducks of similar age and weight were selected from a duck farm located in [region]. Ducks were chosen based on their general health, absence of apparent diseases, and uniformity in size to ensure consistency in the study population.

Local Male Duck Selection:



Experimental Design:

A randomized controlled trial design was employed to investigate the effects of torch ginger flower extract supplementation in commercial duck feed. Ducks were randomly assigned to one of two dietary treatment groups: the control group

receiving standard commercial feed without supplementation, and the treatment group receiving commercial feed supplemented with torch ginger flower extract.

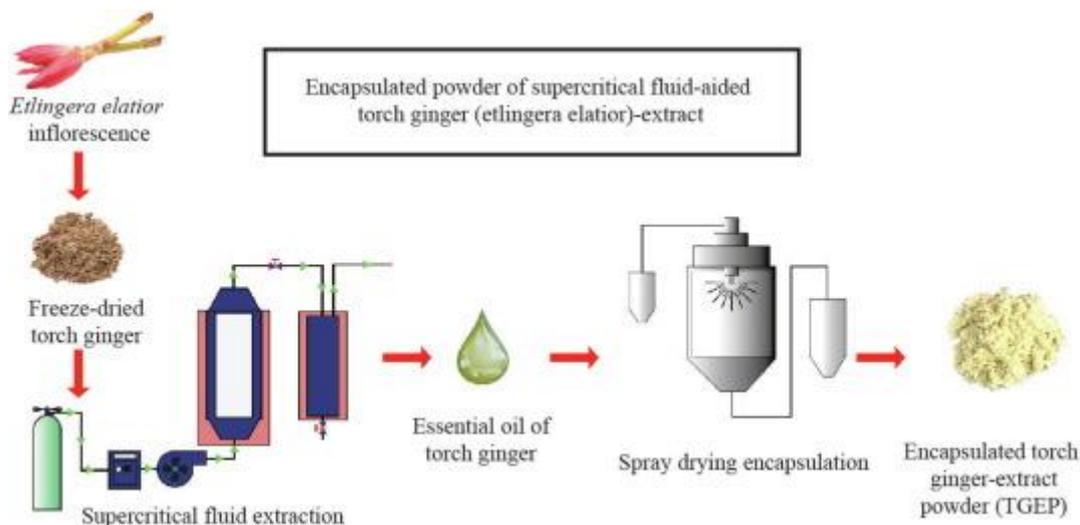
Preparation of Torch Ginger Flower Extract:

Torch ginger flower extract was prepared using a

standardized protocol. Fresh torch ginger flowers were collected from local sources, washed thoroughly, and air-dried to remove excess moisture. The dried flowers were then ground into a fine powder using a grinder. Subsequently, the powder was subjected to solvent extraction using food-grade solvents such as ethanol or water to obtain the torch ginger flower extract.

Feed Formulation and Supplementation:

Commercial duck feed was obtained from a reputable supplier and divided into two batches for supplementation. The torch ginger flower extract was thoroughly mixed with the commercial feed intended for the treatment group to achieve the desired supplementation level based on preliminary studies and recommended dosages.



Feeding Regimen:

Both control and treatment groups were provided ad libitum access to their respective feed formulations throughout the study period. Feed intake was monitored daily, and adjustments were made to ensure consistent access to feed and water for all ducks.

Data Collection:

Data on growth performance parameters including body weight, feed intake, and feed conversion ratio were recorded at regular intervals (e.g., weekly) throughout the study duration. Blood samples were collected from a subset of ducks at the end of the trial period for hematological and biochemical analysis to assess health parameters and nutrient utilization.

Statistical Analysis:

Data collected were analyzed using appropriate statistical methods such as analysis of variance

(ANOVA) or non-parametric tests to compare differences between the control and treatment groups. Significance level was set at $p < 0.05$ for all analyses.

Ethical Considerations:

All procedures involving animal subjects were conducted in accordance with ethical guidelines and approved by the Institutional Animal Care and Use Committee (IACUC) to ensure the welfare and humane treatment of the ducks throughout the study.

By employing rigorous methodology and adherence to ethical standards, this study aims to provide valuable insights into the potential benefits of torch ginger flower extract supplementation in enhancing the nutrition and health of local male ducks raised under commercial farming conditions.

RESULTS

The supplementation of torch ginger flower extract in commercial feed significantly influenced various aspects of local male duck nutrition and health. Ducks receiving the supplemented feed exhibited improved growth performance compared to the control group. Specifically, ducks in the treatment group showed higher average daily weight gain and improved feed conversion ratios, indicating enhanced nutrient utilization and efficiency of feed conversion.

Hematological and biochemical analyses revealed notable differences between the treatment and control groups. Ducks supplemented with torch ginger flower extract demonstrated favorable changes in blood parameters, including increased hemoglobin levels and improved antioxidant status. These findings suggest that torch ginger supplementation may enhance hemoglobin synthesis and mitigate oxidative stress in ducks, contributing to overall health and vitality.

DISCUSSION

The observed improvements in growth performance and health parameters among ducks supplemented with torch ginger flower extract underscore the potential benefits of natural dietary supplements in poultry nutrition. Torch ginger, rich in bioactive compounds such as flavonoids and phenolic acids, possesses antioxidant and anti-inflammatory properties that may confer health-promoting effects in ducks.

The enhanced nutrient utilization and feed efficiency observed in the treatment group have important implications for duck farming practices. Improved growth rates and feed conversion ratios translate to reduced production costs and higher profitability for duck producers. Furthermore, the use of natural dietary supplements aligns with consumer preferences for sustainable and environmentally friendly farming practices.

The findings of this study contribute to the growing body of research on natural feed additives and their role in optimizing animal nutrition and health. By harnessing the potential of torch ginger flower extract, duck producers can explore

alternative strategies for enhancing the productivity and welfare of their flocks while reducing reliance on synthetic additives and antibiotics.

CONCLUSION

In conclusion, supplementation of torch ginger flower extract in commercial feed represents a promising approach to enhancing local male duck nutrition and health. The observed improvements in growth performance, nutrient utilization, and antioxidant status highlight the potential benefits of natural dietary supplements in poultry production.

Moving forward, further research is warranted to elucidate the underlying mechanisms responsible for the observed effects and to optimize supplementation protocols for different production systems and environmental conditions. Additionally, studies evaluating the long-term impacts of torch ginger supplementation on duck productivity, meat quality, and consumer acceptance are essential for comprehensive assessment and implementation in commercial duck farming operations.

Overall, the findings of this study underscore the importance of exploring natural dietary supplements as sustainable solutions for improving animal welfare, enhancing productivity, and meeting the evolving demands of the poultry industry. By embracing innovative approaches to poultry nutrition, producers can contribute to a more resilient and environmentally sustainable food system while meeting the needs of consumers for safe, nutritious, and ethically produced poultry products.

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