71st ICoMST
GIRONA - CATALONIA - SPAIN
3rd-8th August - 2025

# EFFECTS OF *ABELMOSCHUS MANIHOT* FLOWER SUPPLEMENTATION ON BROILER QUALITY CHRACTERISTICS AND STORAGE STABILITY

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## I. INTRODUCTION

The poultry industry plays a critical role in providing a high-biological value animal protein worldwide [1]. However, the restriction on antibiotic use in animal feed has led to increased interest in natural feed additives [2]. *Abelmoschus manihot*, an edible medicinal plant, is rich in bioactive compounds such as rutin, quercetin, and myricetin, which exhibit antioxidant properties [3]. This study investigates the effects of *A. manihot* flower supplementation on broiler quality chracteristics and storage stability, aiming to explore its potential as a natural feed additive.

## II. MATERIALS AND METHODS

A total of 16,000 Ross 308 broilers were raised for 45 days in two separate pens, each provided with a different diet. Six broilers were randomly selected from each group: a control group (CON) fed a standard diet and an experimental group (AM) supplemented with 1% *A. Manihot* flower powder. The proximate composition (moisture, crude protein, crude fat, crude ash), pH, water holding capacity, cooking loss, and shear force were measured. The refrigerated storage stability (4ºC, 0-3 days) of the broiler was investigated by performing volatile basic nitrogen (VBN) and 2-thiobarbituric acid reactive substance (TBARS). Data were analyzed using SPSS 28.0 with independent t-tests to determine significant differences between groups.

## III. RESULTS AND DISCUSSION

The quality characteristics of broiler meat in the CON and AM groups are presented in table 1. No significant differences were observed in moisture content or crude ash. AM group exhibited significantly higher crude protein content than CON group, while crude fat content was significantly lower. These findings align with studies reporting increased protein and reduced fat in broilers fed plant-based additives like chili powder [4] and moringa leaves [5]. No significant differences were observed in pH or water holding capacity. However, *A. manihot* flower supplementation reduced cooking loss, while shear force was significantly increased compared to CON group.

Table 1 – Quality characteristics of broiler meat in the CON and AM groups

| Items | CON | AM | *p*-value |
|---|---|---|---|
| Proximate composition | | | |
| Moisture | 74.71±0.41 | 74.59±0.18 | 0.564 |
| Crude protein | 22.15±0.35$^{b}$ | 22.99±0.25$^{a}$ | 0.001 |
| Crude fat | 1.72±0.13$^{a}$ | 1.27±0.33$^{b}$ | 0.047 |
| Crude ash | 1.42±0.24 | 1.15±0.12 | 0.058 |
| Meat quality | | | |
| pH | 6.01±0.13 | 6.09±0.05 | 0.218 |
| Water holding capacity (%) | 62.23±4.87 | 64.57±5.48 | 0.491 |
| Cooking loss (%) | 19.12±1.80$^{a}$ | 16.50±0.75$^{b}$ | 0.021 |
| Shear force (N) | 55.30±11.31$^{b}$ | 71.61±8.66$^{a}$ | 0.030 |

$^{a, b}$Means with different superscriptions within the same row indicate significant differences ($P < 0.05$).

The VBN values of broiler meat in the CON and AM groups during storage are presented in Figure 1a. At both 0 and 3 days, the AM group demonstrated significantly lower VBN values compared to the CON group. These findings indicate that *A. manihot* flower supplementation may inhibit protein degradation, due to its bioactive compounds with antioxidant and antimicrobial properties. The TBARS values of broiler meat in the CON and AM groups during storage are presented in Figure 1b. There was no significant difference at 0 days, but AM group showed significantly lower values at 3 days. This reduction is attributed to the antioxidant activity of flavonoids in *A. manihot*, such as rutin and quercetin [6].

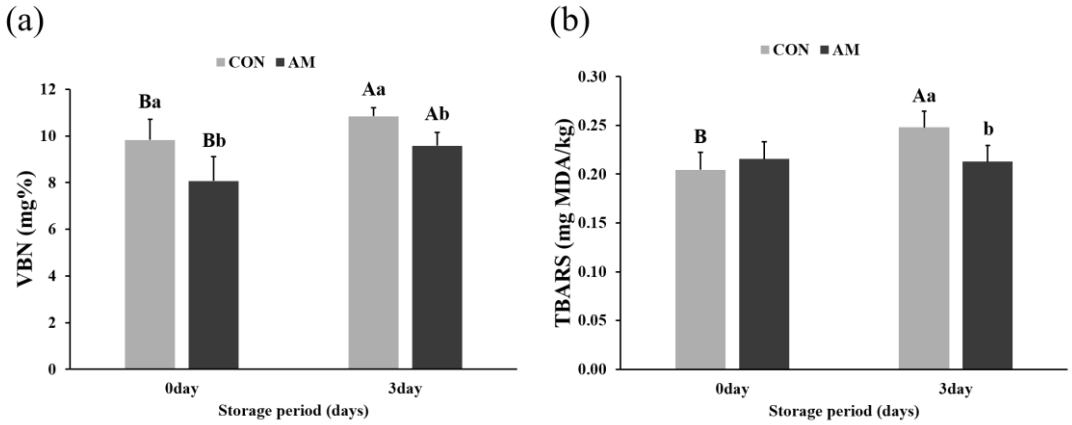



Figure 1. Storage stability of broiler meat in the CON and AM groups during storage. (a) VBN values, (b) TBARS values. $^{A, B}$Means with different letters within each treatment indicate significant differences ($P < 0.05$). $^{a, b}$Means with different letters within each day indicate significant differences ($P < 0.05$).

## IV. CONCLUSION

Supplementation with 1% *A. manihot* flower powder improved the meat quality of broilers by increasing crude protein content and reducing cooking loss. Additionally, *A. manihot* supplementation enhanced storage stability by mitigating protein degradation and lipid oxidation. These findings suggest that *A. manihot* is a promising natural feed additive for producing high-quality broiler meat.

## ACKNOWLEDGEMENTS

This research was supported by "Regional Innovation Strategy (RIS)" through the National Research Foundation of Korea(NRF) funded by the Ministry of Education(MOE) 2021RIS-001)

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