EFFECT OF ACIDIC ELECTROLYZED WATER TREATMENT ON THE PHYSIOCHEMICAL AND MICROBIAL CHARACTERISTICS OF *Wolffia globosa*.

BELVA JAUZAA' RIESTI ANANDA

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY
FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY
IPB UNIVERSITY
BOGOR
2025

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Belva Jauzaa' Riesti Ananda

F2401211824

ABSTRACT

BELVA JAUZAA' RIESTI ANANDA. Effect of Acidic Electrolyzed Water Treatment on the Physicochemical and Microbial Characteristics of *Wollfia globosa* Supervised by Prof. Dr. Winiati P. Rahayu.

Wolffia globosa is highly valued for its nutritional benefits and sustainability. It thrives in freshwater environments but is susceptible to contamination. As a result, proper sanitation is crucial during both cultivation and handling. This study aimed to compare the effectiveness of tap water and acidic electrolyzed water (AEW) at different concentrations and durations of time as a postharvest treatment for *Wolffia globosa*. The preliminary experiment evaluated disinfection levels using tap water, and 40 and 60 ppm of AEW, with 3 and 5 min soaking for all treatments. Using aerobic plate count (APC) to measure the number of microorganisms, it was found that soaking the sample for 5 min in AEW reduced the number of microbes by about 2 logs compared to the control (non-soaking) sample, from more than 5.06 log CFU/g to 3.84 log CFU/g. The following experiment was set to soak for 5 min at various concentrations of AEW, specifically 40, 60, and 80 ppm, to confirm the effectiveness of the treatment. It showed that soaking using 80 ppm resulted in 98% microbial reduction and showed a significant difference among the other concentrations. Quality in terms of APC, color analysis, total phenolic content (TPC), total flavonoid content (TFC), 2,2-diphenyl-1-picrylhydrazyl assay (DPPH), and ferric reducing antioxidant power (FRAP) assay was determined during 0-10 days of storage at 5±1°C. The TPC, TFC, DPPH, and FRAP values did not significantly change over the time of storage ($P > 0.05$). At 10 days of storage, AEW at 80 ppm provided the lowest APC and the most probable number (MPN) of presumptive coliform. It may conclude that applying AEW could be an alternative treatment for disinfection and maintaining the quality of *Wolffia globosa* at cold storage.

Keywords: *electrolyzed water, microbial contamination, sanitation, physicochemical, Wolffia globosa.*

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BELVA JAUZAA' RIESTI ANANDA

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DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY
FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY
IPB UNIVERSITY
BOGOR
2025

Examiners Committee for the Undergraduate Thesis Defense

1. Prof. Dr. Nugraha Edhi Suyatma, STP, DEA.
2. Dr. Diah Chandra Aryani STP, M. Sc

Title : Effect of Acidic Electrolyzed Water Treatment on the Physicochemical and Microbial Characteristics of *Wollfia globosa.*
Name : Belva Jauzaa' Riesti Ananda.
Student ID : F2401211824

Approved by

Supervisor 1:
Prof. Dr. Winiati P. Rahayu
NIP. 195608131982012001

Acknowledged by

Head of Food Science and Technology Department.
Prof. Dr. Eko Hari Purnomo S.T.P, M. Sc
NIP 19760412 199903 1 004

Examination Date:
27 May 2025

Graduation Date:

PREFACE

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Bogor, May 2025

Belva Jauzaa' Riesti Ananda

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