

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

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ABSTRACT

BELVA JAUZAA' RISTI ANANDA. Effect of Acidic Electrolyzed Water Treatment on the Physicochemical and Microbial Characteristics of *Wolffia 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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EFFECT OF ACIDIC ELECTROLYZED WATER TREATMENT ON THE PHYSICOCHEMICAL AND MICROBIAL CHARACTERISTICS OF *Wolffia globosa*

BELVA JAUZAA' RISTI ANANDA

Final Project

As one of the requirements to acquire a bachelor's degree
in food science and technology

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PREFACE

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Bogor, May 2025

Belva Jauzaa' Riesti Ananda

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