

**ANALYSIS OF ANTHOCYANIN COMPOUND STABILITY IN EYEDROP
FORMULATIONS USING VARIOUS TYPES OF AMINO ACIDS AND THE
ANTIBACTERIAL EFFECTS OF EYEDROPS**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.



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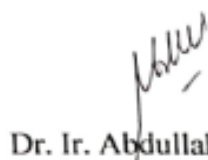


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ABSTRACT

ANALYSIS OF ANTHOCYANIN COMPOUND STABILITY IN EYEDROP FORMULATIONS USING VARIOUS TYPES OF AMINO ACIDS AND THE ANTIBACTERIAL EFFECTS OF EYEDROPS

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This study explores the stability and antibacterial efficacy of anthocyanin-based eye drops from *Clitoria ternatea L.* (Butterfly Pea) using amino acids L-Histidine, L-Methionine, and L-Tryptophan as stabilizers. Butterfly Pea's anthocyanins offer antimicrobial benefits but are unstable in solutions. Previous research indicated L-histidine can stabilize anthocyanins for 14 days. This research aims to enhance stability and evaluate antibacterial effects against common ocular bacteria (*Staphylococcus aureus*, *Escherichia coli*, and *Streptococcus mutans*) and to create a stable, effective natural eye drop with commercial potential. Results revealed that differences in anthocyanin content across different harvest days, with the highest concentration (11.99 mg/g) on the first day. Factors such as plant age and environmental conditions influenced these variations. Adding L-methionine as a copigmentation agent can effectively stabilize anthocyanins by minimizing color loss compared to using other amino acids. The amino acids did not affect the antibacterial activity of the formulations, with anthocyanins demonstrating direct antibacterial effects.

Keywords: Butterfly pea, amino acids, Anthocyanin stability, harvest days, Antibacterial activity

DEDICATION

I dedicate this work to my dear family, lecturers, friends and the future of my country,
Indonesia.

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