ANTIFUNGAL PROPERTIES OF GARLIC (*Allium sativum*) AGAINST ISOLATED SPOILAGE FUNGI FROM HARUMANIS (*Mangifera indica* Linn.)

FATIN SHAFIQA BINTI SHAZILI

BACHELOR OF SCIENCE (Hons.) BIOLOGY
FACULTY OF APPLIED SCIENCE
UNIVERSITI TEKNOLOGI MARA

July 2022

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FATIN SHAFIQA BINTI SHAZILI

Final Year Project Submitted in
Partial Fulfilment of the Requirement for the
Degree of Bachelor of Science (Hons.) Biology
In the Faculty of Applied Science
Universiti Teknologi Mara

July 2022

This Final Year Project Report entitled **"Antifungal Properties of Garlic (*Allium sativum*) Against Fruit Spoilage Fungi from Harumanis (*Mangifera indica* Linn.)"** was submitted by Fatin Shafiqa binti Shazili in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

Mr. Muhammad Syukri bin Noor Azman
Supervisor
B. Sc. (Hons) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Mr. Muhammad Syukri bin Noor Azman
Project Coordinator
B. Sc. (Hons) Biology
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Mrs. Zalina binti Zainal Abidin
Head of Programme
B. Sc. (Hons) Physics
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Date: _____

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ABSTRACT

ANTIFUNGAL PROPERTIES OF GARLIC (*Allium sativum*) AGAINST SPOLEDGE FUNGI FROM HARUMANIS (*Magifera indica* Linn.)

Garlic (*Allium sativum*) is a species from *Amaryllidaceae* family that widely used for culinary and medical purposes. Various method to extract garlic such as fresh, powder and oil with distinct amount of allicin an antimicrobial agent has an ability to act against various microorganism include fungi in order to reduce the use of chemical fungicide. The main objective of this study is to evaluate the antifungal properties of garlic (*Allium sativum*) against Harumanis (*Magifera indica* Linn.) spoilage fungi by using different solvent and concentration. In addition, isolation and identification of fungi on infected Harumanis (*Magifera indica* Linn.) also the aim of this study. Distilled water, ethanol and methanol extract of *Allium sativum* at different concentration (1, 10, 25, 50 and 100%) respectively were screened for antifungal activity using agar well diffusion method against identified fungi by swabbed the fungi spore on the Potato Dextrose Agar (PDA). Two type of fungus successfully isolated from symptomatic *Magifera indica* Linn. name as RH1B and RH2W suspected to be *Aspergillus* species and *Colletotrichum* species respectively by directly observe the colony on the agar and microscopic examination to identified the spore of fungi. Only putative *Aspergillus sp.* was chosen for antifungal test due to less sensitive to be contaminate compare to putative *Colletotrichum sp.*. All extracts of *Allium sativum* show an inhibition zone against putative *Aspergillus sp.* with 1.5×10^6 spore/mL of spore concentration. The greater inhibition by distilled water at 100% (g/mL) concentration followed by methanol and ethanol (35.17±2.84 mm, 35.68±2.84 mm and 34.50±1.80 mm respectively). The minimum inhibition concentration for distilled water and methanol at 10% (15.17±3.55 mm and 15.17±3.55 mm) while for ethanol 25% with 17.17±4.48 mm of inhibition zone. The significant value between solvent and concentration was only at 25% ($p \leq 0.05$) after one-way ANOVA analysis and post hoc Tukey test on SPSS. In conclusion, the isolated fungi were identified as *Aspergillus sp*. and *Colletotrichum sp.* and the *Allium sativum* extract with distilled water, ethanol and methanol show a potential of antifungal properties at different concentration against isolated fungi. Further study is needed for species confirmation and used of different extraction method is recommended to obtain a pure extract.