

This Final Year Project entitled “**Screening of antimicrobial activity of different parts of onion (*Allium cepa*)**” was submitted by Rosnah Mohd Moris, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) in Food Science and Technology, in the Faculty of Applied Sciences and was approved by

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ABSTRACT

SCREENING FOR ANTIMICROBIAL ACTIVITY OF PLANT EXTRACTS FROM ONIONS (*Allium cepa*)

The aim of this study is to determine the antimicrobial activity of plant extracts from onion (*Allium cepa*) specifically from bulb onion and spring onion. Beside that, this research is also to investigate the microorganisms that are inhibited by the onion extract. Traditionally, these plants play a very important role in the domestic uses of this species has been studied such as spices, vegetables and medicinal plants. A compound of this species that is S-alk(en)yl cysteine sulphoxides (ACSOs) is shown to give rise to the flavour and pungency characteristic of this plant. Onion extracts have been recently reported to be effective in cardiovascular disease and possess many other biological activities including antimicrobial, antioxidant, anticarcinogenic, antimutagenic, antiasthmatic, immunomodulatory and prebiotic activities. Plant extracts will be prepared by two types of extraction methods; water and solvent extraction. Antimicrobial activity will be measured by serial dilution method and disk diffusion assay. Antimicrobial activity of these extracts will be tested using microorganisms such *Staphylococcus aureus*, *Escherichia coli*, *Candida albicans*, *Pseudomonas aeruginosa* and *Streptococcus pyogenes*. The result showed that ethanol extract of onion bulb gave the widest inhibition zone against *Streptococcus pyogenes* with 2 g/ml concentration. Both parts of the *Allium cepa* have antimicrobial activity against microorganisms tested except *Candida albicans*. However the concentrations of the extracts play an important role in determine the effectiveness of this inhibitory activity.

CHAPTER 1

INTRODUCTION

1.1 Background and problem statement

An antimicrobial agent is a natural or synthetic chemical that kill or inhibits the growth of microorganisms. Agent that kill organisms are often called cidal agent, with a prefix indicating the kind of organisms killed (*e.g.* bacteriocidal, which kills bacteria). Agents that do not kills but only inhibits is called static agent (*e.g.* fungistatic, that only inhibits fungi not killed them) (Madigan *et al.*, 2003). An antimicrobial agent acts on the basis of their biochemical targets in the cell such as inhibition of cell wall synthesis, protein synthesis, nucleic acid synthesis and metabolic function (Denver and Louis, 1983).

In traditional medicine, onions were used against different infectious disease for many countries. Even the Egyptian Papyrus Ebers mentioned onion containing remedies against worms, diarrhea, other infection and inflammatory disease. Onion oils and aqueous extracts were almost ineffective against Gram-negative bacteria but effective against several Gram-positive bacteria. Onion extract also effective against fungi and yeast species for example against *Microsporium canis* and *Micosporum gypseum* (Rabinowitch and Curah, 2002).