UNIVERSITI TEKNOLOGI MARA

ANTIMICROBIAL ACTIVITY OF PROCESSED *VACCINIUM MACROCARPON* (CRANBERRY) AGAINST BACTERIAL STRAINS CAUSING URINARY TRACT INFECTION

By

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DECLARATION

"I hereby declare that this thesis is based on my original work and has not been submitted previously or currently for any other degree at UiTM or any other institutions."

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TABLE OF CONTENTS

Pages

ABSTRACT

Urinary tract infection (UTI) is the most common disease in the community throughout the world especially in women and it is mostly caused by gram-negative bacteria. Antibiotics are used routinely for treatment of UTIs but these agents are not always effective and can cause side effects if consumed inappropriately. Thus, many clinical studies strongly suggest the use of cranberry as the first line of defence in the prophylaxis of UTI. Cranberries have long been the focus of interest for their beneficial effects in preventing UTIs. Even though many clinical trials have been evaluating the use of cranberry products for prevention of UTIs, results have been inconsistent and the efficacy remains unknown. Therefore, the aim of this study is to determine antimicrobial activity of processed *Vaccinium macrocarpon* (cranberry) against bacterial strains causing urinary tract infection namely *Escherichia coli*, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa*. Filter sterilized ethanol extract of cranberry was prepared and used in this study. Antimicrobial sensitivity testing (AST) of the cranberry concentration (1000 mg/ml) was performed by using standard procedure of Kirby Bauer disc diffusion followed by minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) tests. The AST result shows that only *Pseudomonas aeruginosa* has shown sensitive result. *E.coli* and *K.pneumoniae* show exhibited zone of inhibition toward cranberry extract. The MIC value of cranberry extract against *E.coli* and *K.pneumoniae* are 125 mg/ml while for *P.aeruginosa*, cranberry extract can inhibit up until 31.25 mg/ml. The lowest MBC of *E.coli* and *K.pneumoniae* was 125 mg/ml while the lowest MBC of *P.aeruginosa* was at concentration of 62.5 mg/ml. In conclusion, processed cranberry has better antibacterial effect on *P.aeruginosa* than *E.coli* and *K.pneumoniae in vitro*. Furthermore, processed cranberry can inhibit bacteria only in small amount thus it only suitable to be consumed as prevention measure on mild UTI and not as a therapy or for chronic UTI. It is assumed that if pure cranberry extract were used, the results will be more promising.