



**UNIVERSITI TEKNOLOGI MARA**

**COMPARISON OF ANTIMICROBIAL  
ACTIVITIES BETWEEN ETHANOL AND  
AQUEOUS EXTRACTS OF *Ziziphus Mauritiana*  
LEAVES AGAINST URINARY TRACT  
INFECTIONS MICROORGANISMS**

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Thesis submitted in partial fulfilment of the requirement for  
**Bachelor of Medical Laboratory Technology (Hons)**

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## DECLARATION BY STUDENT

Project entitled “Comparison of Antimicrobial Activities between ethanol and aqueous extracts of *Ziziphus mauritiana* leaves against Urinary Tract Infections Microorganisms” is a presentation of my original research work. I hereby declare that this thesis is 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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## ABSTRACT

Urinary Tract Infections (UTIs) is one of the most frequent bacterial infections both in inpatient and outpatient clinical settings. In recent years, it has been reported the clinical available treatment is not effective due to the ability of bacteria to develop resistance against antimicrobial agents. Therefore, the interest in drugs derives from plant become widespread as it is safe and economic compared than synthetic drug. On the other hand, plants have been used as a main source of therapeutics since ancient time until now. *Ziziphus mauritiana* belong to the family of Rhamnaceae and known to have some medical benefits such as anti-diarrheal and antimicrobial. In the present study, ethanol and aqueous extract of *Z. mauritiana* leaves were screened for potential antibacterial activity toward UTIs bacteria. The aim of the present study is to compare the antimicrobial activities between ethanol and aqueous extract of *Z. mauritiana* leave against Urinary Tract Infections (UTIs) bacteria which are *Staphylococcus saprophyticus*, *Klebsiella pneumoniae*, *Escherichia coli* and *Proteus mirabilis*. The antimicrobial activities are determined by using disc diffusion, minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) method. The result for ethanol extract of *Z. mauritiana* leaves against UTI bacteria showing only *S. saprophyticus* and *K. pneumoniae* showed the presence of zone inhibition with mean of 8.00 mm and 9.67 mm respectively while *P. mirabilis* and *E. coli* showed no zone of inhibition. The MIC and MBC value for *S. saprophyticus* were 31.25 mg/ml and 125 mg/ml respectively. Meanwhile, MIC and MBC value for *K. pneumoniae* were 15.63 mg/ml and 31.25 mg/ml respectively. In contrast, the aqueous extract of *Z. mauritiana* leaves produced no inhibitory effect against *S. saprophyticus*, *K. pneumoniae*, *E. coli* and *P. mirabilis*. Thus, ethanol extract of *Z. mauritiana* leaves possess antibacterial activities rather than aqueous extract. The findings showed the potency of alcoholic solvent such as ethanol in extracting component of medicinal plants compare than aqueous extract.

**Keywords :** *Ziziphus mauritiana*, *Staphylococcus saprophyticus*, *Klebsiella pneumoniae*, *Escherichia coli*, *Proteus mirabilis*