

## Research Article

### The Effect of Ziziphora Tenure I Plant Extraction on MRSA Bacteria in Urinary Tract Infection

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## Abstract

Urinary tract infection is the most common clinical problem in the world. As a result of the rapid rise of antibiotic resistance, the researchers have been encouraged to find an alternative to traditional antibiotics. Ziziphora tenure I plant with high percentage of phenol has high mortality effect. To prevent urinary tract infections caused by *Staphylococcus saprophyticus* by extract ziziphora tenure I. Extract obtained by Soksoleh medium prepared in accordance with manufacturer's instructions ready. We sterile, bacterial strains are looking at the Nutrient broth and a day to 24 hours at 35°C Incubation of them. 20g of extract was diluted to about a 100 mg/ml injection blank disk and kept for 15 minutes at 55°C to dry, Inoculated with bacteria McFarland standard 0.5 we passage on the media mauler Hinton agar, We invest and incubate for 24 hours at 35°C. Then we measured the diameter. A disk negative control of methanol and positive control of Ciprofloxacin and gentamicin we used. The effect of killing the plant Ziziphora tenure I is higher than antibiotic.

Due to the high cost of the plant mentioned in the logic of the northeast of the country is very strong in the area of traditional medicine. This plant in the treatment of urinary tract infection and improve the effectiveness of anti- bacterial species is considered.

**Keywords:** Methanol; Urinary tract infection; Ziziphora tenure I; Antibiotic; Gentamicin

## Abbreviations

MIC: Minimum Inhibitory Concentration

MBC: Minimum Bactericidal Concentration

## Introduction

The aim of this study was to prevent urinary tract infections with Gram positive bacteria created by ziziphora tenure I plant. Urinary tract infection (UTI) is a bacterial infection of some kind that will affect a part of the urinary tract. When the lower urinary tract infection affects simple cystitis (bladder infection) is called and when the upper urinary tract that affects pyelonephritis (kidney infection) is known.

Lower urinary tract symptoms include pain or frequent urination or urge to urinate (or both), While the symptoms of pyelonephritis include fever and flank pain with symptoms of lower urinary tract infection. The symptoms in the elderly or very young may be vague or uncertain.

*Escherichia coli* is the leading cause of both types, however, rarely, other bacteria, viruses or fungi may be the cause. Urinary tract infections usually occur in women than in men,

because half of the women in her life at least once got infection. Recurrences are common. Risk factors include female anatomy, intercourse and family history, in case of pyelonephritis is usually a bladder infection, but may also be caused by blood-borne infection. Diagnosis in young healthy women is possible only on the basis of symptoms. In people with vague symptoms, diagnosis may be difficult because bacteria may be present, but not infection. In complicated cases or if treatment fails, it may be useful urine culture. Urinary tract infections are the most common bacterial infections in women. The infection occurs most often between the ages of 16 and 35 years of age, and 10% of women are infected each year and 60% during their life once they are infected. Recurrences are common and nearly half of those over a year became infected for a second time. Urinary tract infections in women than in men four times more likely to occur. Pyelonephritis occur 20-30 times less [1]. The most common cause of infections in hospital patients and 40% of it is UTI, with age, the amount of bacteria in the urine without symptoms, from two to seven percent of women of childbearing age and the elderly in nursing homes increased by 50% in women [2]. The amount of bacteria in the urine (asymptomatic UTI) in men, 75 years old and above is between 7-10%. Urinary tract infections may affect 10% of people in childhood. Among children, the incidence of urinary tract infection in uncircumcised boys under the age of three months was highest, and then less than a year girls in second place [3]. However, estimates of the prevalence of the disease among children is highly variable, In the group of children with fever and aged between birth and two years old, between 2 and 20% of them were diagnosed with urinary tract infection.

### Because

*E. coli* causes urinary tract infections is 80-85% and 5-10% of *S. Saprophyticus* is other causes. This may be due to a viral infection or fungal infections rarely. Other bacterial causes are: *Klebsiella*, *Proteus*, *Pseudomonas* and *Enterobacter*. This is not uncommon and is usually related to abnormalities of the urinary tract or urinary catheter [4]. Urinary tract infections caused by *Staphylococcus Aureus* commonly occurs as a side effect of blood-borne infections.

### Pathogenesis

The bacteria that cause urinary tract infection is usually through the urethra into it. However, the infection may also occur through blood or lymph. It is believed that intestinal bacteria are usually transmitted to the urethra, and the risk is higher in women due to their anatomy.

*E. coli* bacteria found its way to the bladder after bladder wall is able to bind and form a biofilm resistant immune response.

### Ziziphora Tenuri L

A fuzzes warm plant, to strengthen the stomach, is very convenient as well if combined with tea after meals will double impact. This vegetable is one of the herbs that we use fewer in Iran, but we recommend that you use this plant. In this article explores the benefits and different ways we describe the use of these herbs.



1. It will lyses the biliary secretion (anti toxin): pour it instead of the morning and afternoon tea daily. 3 g per 200 ml of boiling water for 20 minutes then drink it.
2. Laxitives (Anti gass): like above prepare and drink it.(1)
3. Muculand: like above prepare and drink it.(1).
4. Easy menorrhea: Boiled three times daily 5 gram per 150 milliliters of water used
5. Heart tonic: : 2 grams per 150 ml of boiling water for tea has brewed 20 minutes of meal.
6. Those who have brucellosis use boiled Kakooti.
7. Persons who have rheumatism can use Kakooti for the bathroom in the tub poured 100g Kakooti in 3 liters of boiled water into the tub, sit down.
8. 5 grams Kakooti for whooping cough in 300 ml of boiled water and drink 3 cups of brewed day.
9. Kakooti tea after meals not only like black tea does not excrete iron digestion easy.
10. Chronic bronchitis is brewed for Kakooti 3 grams per 300 ml of water a day will eat 4 cups.
11. To prevent bleeding from the nose and tail Kakooti use

cotton dipped in Kakooti put in the nose.

12. Those who have weak body parts they use the bathroom Kakooti such as rheumatism.

13. To treat sciatica use the bathroom Kakooti like rheumatism, and as a poultice on the sciatic their Kakooti.

14. Kakooti is men sexual power amplifier.

15. In the summer a good drink to cool the body.

## Methods

### The process of extraction

Extract of aerial parts of the plant, used in traditional medicine in the treatment of infections is very important, In May 1394, the Mountains (Shah Jahan) Esfarāyen city were collected. Keep to dry out in dark area, the process takes 2 & 3 days. After we complete drying mill it.

In laboratory Tonekabon city, extract of the leaves was done by soxohle. The first step is: to measure (plant dried and milled) the value as 10 grams Ziziphora to 50 ml of methanol and then Ziziphora plant living in our filter paper packaging.

Because when the extraction was completed, dispose waste easier to separate the extract (extract achieved). The soxohle device is boiling 1 hour 45 minutes, the device will 2 & 3 disposal unit out of the plant extract to be more concentrated solution. The solution is poured into a clean metal tray placed at room temperature to dry. Next step: After 72 hours methanol solution will evaporate. The dry extract from the tray scrapers and microbial tests conducted on the medias.

### Requirement equipment for extraction

Methanol -ziziphora tenure l plant - tray-balloons-filter paper-stone smooth weld -flame-Spatula.

### The means and requirements for susceptibility testing "Disk diffusion" In this study:

1. Mueller-Hinton agar "is the media is used for Antibiogram(disc infusion)
2. McFarland 0.5 for calibration.
3. 1 ml sterile normal saline tube.
4. Antibiogram discs.

5. Purity plate of bacteria.

6. Sterile swabs, disposable loops, safety cabinet

## Antibiogram

**Goal:** Determination of the sensitivity of bacteria to antibiotics using plant extracts Ziziphora. Above mentioned stuff and items for processing is required.

Various methods for determining the susceptibility of bacteria to antibiotics such as MIC and disk diffusion, but the simplest and most common methods is the DISK diffusion method.

In this study done lawn culture of bacteria on CAN and CPS3 then place the impregnated disk with antimicrobials with known concentration at a distance of at least 2.4 cm and then incubated for a sufficient time and we consider the plates. After 24 hours (overnight incubation), the penetration of antibiotics into the environment and the sensitivity of the bacteria around the disk according to the power of the antibiotic in preventing bacterial growth an inhibition zone seen. But in MIC or minimum inhibitory concentration in tubes containing liquid medium, different concentrations of an antibiotic is added and then the bacteria within these cultures have to see that a minimum concentration of antibiotics that can prevent growth of bacteria this method is more accurate but is more difficult , time-consuming and expensive .

But for the first method should start with a bacterial suspension with turbidity 0.5 McFarlane created, that should be the standard against which it prepare as following :

To have a bacterial suspension with 0.5 McFarland turbidity, solve few number of bacteria in some sterile normal saline with 0.5 McFarland turbidity. Or some bacteria can be cultured in TSB media (tube), then we incubate it to get 0.5 Mc Farland turbidity, then with a sterile pipet we get off 0.5 ml of bacteria suspension and transfer it to media then we do a lawn culture with sterile swab and give time around 15 minutes till get dry off. Then place the antibiotics discs on media and choose of antibiotics disk must be related to the group of bacteria, incubate the plate for 16-18 hours, then we measure the clear zoon around discs and compare it with the standard tables ,for fastidious bacteria use blood agar Muller Hinton, and for anaerobic bacteria use the  $\text{CO}_2$  jars .

### Antibiogram disc infusion method

In medical laboratory while we receive the specimen for culture, we do striking culture on proper media(CAN and CPS3 media), after overnight incubation if there is growth of pathogen bacteria ,we prepare the bacteria suspension with 0.5 Mc Farland turbidity and make a lawn culture on Muller Hinton Agar (for gram negative bacteria and blood Muller Hinton agar

for gram positive bacteria) then place antibiotic disc on lawn culture in media, after overnight we do measurement of clear zone around antibiotics.

**Antibiogram principles**

Antibiogram principles is based on two methods in microbiology such as:

1. Minimum Inhibitory Concentration (MIC)
2. Minimum Bactericidal Concentration (MBC )

**Results**

1. Effect of bactericidal antibiotics plant ziziphora tenure 2- higher price than plant antibiotics used in this study is higher 3- side effects of antibiotics, but herbal medicine has no side effects. 4-The overuse of antibiotics used to treat urinary tract infections caused by fungal disease is genital.

1- Table Zone diameter (staph group B)

Landafolia	Ziziphora	staph
<b>Zone diameter</b>	<b>tenure I Zone diameter</b>	<b>group B Dilution on the blank disc</b>
10 mm	15 mm	50 □
15 mm	18mm	100 □
16 mm	20 mm	150 □

2 + ← 10-16mm

3+ ← ≥15mm

**Bacteria used:**

1. Of urinary tract infections in young women :Saprophytics
2. Cause hospital infections: staph areus MRSA
3. Abortion cause urinary tract infections and miscarriage :staph group B

**Indicators measuring the diameter of inhibition:**

2. Table Zone diameter(*Saprophytic*)

Ziziphora tenure I	<i>Saprophytic</i>
<b>Landafolia Zone diameter</b>	<b>Dilution on the blank disc</b>
7mm	50 □
10mm	100 □
15mm	50 □

**Discussion**

According to the CLSI, for MRSA inhibition zone diameter is 21-17 mm With 30mgram disc, based on above description, effect of ziziphora I on MRSA ,the clear zone diameter is acceptable zone , In this study, the effect of the plant Ziziphora tenuri I is the most strongest effect than other plant has been worked out.

According to the clear zone diameter of sensitivity of bacteria caused urinary tract infection, that are good about Ziziphora tenuri I respectively.

Indicators measuring the diameter of inhibition:

1 + ← ≤9mm

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