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Original Research Article

Isolate and Diagnose Negative Bacteria that Cause Urinary Tract Inflammation and Test their Sensitivity to Certain Antibiotics and *Rheum Palmatum*

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Abstract: The current study included the collection of 50 diarrhoea samples from UTIs, ages 25-50 years, 60% female and 40% male patients reviewed to Kirkuk city laboratories, gave 40 positive germ growth samples and 80%, while 10 other samples gave no germ growth. Isolation and diagnosis results showed that E.coli was prevalent on Proteus mirabilis and at 75%, while Proteus mirabilis was at 25% lower. The results of the study showed isolated bacterial sensitivity to a number of antibiotics and the results showed isolated bacterial sensitivity to anti-Ciprofloxacin while bacterial isolates showed the highest resistance to antibiotics. Effective compounds were identified and their concentration in the Riwas plant was determined using High Performance Liquid Chromotography HPLC (containing phenolic, turbine and alkaloid compounds, aquatic and alcoholic extracts were tested at concentrations (25), (50) and (100) and the focus (25) was on the lowest toxins.

Keywords: Urinary Tract Infection (UTIs), Rheum Palmatum, Antibiotics.

INTRODUCTION

Urinary Tract Infection (UTIs) is a common and widespread problem around the world. The infection results from the abnormal growth of pathogenic bacteria. The infection is caused by the presence and growth of bacteria in the urinary channel [1]. There are both sexes and different age groups but their presence in females is more compared to males as a result of philosophical and anatomical reasons, including the Palais al-Ahlil and the proximity of the urine hole to the reproductive and anal regions[2, 3]. Bacterial infection occurs due to both the positive and negative bacteria of Kram dye, but Kram dye-negative bacteria have the highest incidence of infection compared to Chram-positive bacteria and the most common is Escherichia.coli [4].

E.coli is one of the members of the intestinal family, passive to the dye of kram, and sticky shape moving with watts or immovable, fermenting many sugars, including lactose, mannose and serptol, and optimal heat for its 36_37 growth [5]. Proteus mirabilis is one of the most important species of proteus sex, which includes four types of three of them of clinical importance P.mirabilis, P.vulgaris, Ppenneri The fourth type P.myxofaciens is isolated from mite larvae and has no pathogenic effect dye", which is negative for optional anaerobic dye, negative for indole s gastrointestinal tract and some animals are found in contaminated water and soil and have the property of spreading on the transplant medium with consecutive concentric waves called swarming ivory [6].

Urinary tract infections are often treated with broad-spectrum antibiotics before transplant screening and antibiotic allergy testing [7]. Recent research and studies therefore recommend limiting the use of antibiotics and providing medicinal plants as natural therapeutic alternatives because they have the potential to bring about more physiological change than industrial and chemical materials as well as security, inexpensive and easy access thereby reducing the development of new resistant strains [8].

Rheum Palmatum is a Preah aromatic herb upright and perennial grow up to a height of 120 to 200 cm, The flowers are 1_2 mm in diameter and all of their flowers are heterogeneous with yellow petals and are produced in composite umbrellas and have more therapeutic properties than nutritional and industrial because of their biological activity as they act as antibacterial agents [9].

PATIENTS AND METHODS

1. Sample collection and transplant The current study included the collection of 50 generating samples from patients at ages ranging from (25_50) years from reviewers of Kirkuk/Iraq laboratories during the period 20/1/2024 to 10/3/2024. The samples included 50 samples from people experiencing urinary tract infections. A drop of each urine sample was taken by the microbial vector Loop and planted on two transplant circles, namely blood acre and macunki. cultivated dishes with a temperature of 37 ° C for 18.24 hours, The developing colonies were then transferred to new circles to purify them and acquire individual colonies. pure colonies were preserved using a 4 ° C diversion feeder pending subsequent diagnostic tests [10].
2. Diagnosis of Isolated Under Study Isolates under study were diagnosed according to the following tests: Morphological Diagnosis and Microscopic Diagnostics -3Collection of plant samples (rywas leaves):

The roots of the Riwas plant have been collected from areas of northern Iraq (Shakalawah-Erbil governorate) during the autumn season 2023, the roots were thoroughly washed with water and then dried in shade after they were placed in clean pots at laboratory temperature with continuous stirring to prevent rotting, and then well grinded using electric mill, and kept in sterile and sealed bottles, in moisture-free conditions until the start of plant extracts [3].

Preparation of Water Extracts

Weighed (1 kg) from the vegetable model and placed in a container beaker on 1000 ml of distilled, sterile water and the beaker jump until the mixture is homogenized and the beaker is left on the vibrator for a full day ", then nominated the mixture using layers of medical gauze to remove the impurities stuck in it, Then nominated using filtration papers to prevent impurities from passing with leach After placing in the oven at 40 ° C until the whole water evaporates and a dry powder is at the bottom of the bottom, The extract is then kept in sterile tubes until use [3].

Preparation of Alcohol Extracts

The alcohol extract was prepared in the same way as the water extract and in the same weights as the water distilled with ethylated alcohol with concentration 90%.

Antibiotics Antibiotics

The current study used antibiotic tablets for the purpose of testing the sensitivity and resistance of isolated bacterial species to antibiotics and includes Ciprofloxacin (Cip), Gentamicin (CN), Erythromycin (E).

Preparation of Farming Media

The following farming circles have been prepared Blood agar ،Nutrient broth ،Nutrient Agar ،Agar MacConkey ،Brain-heart infusion agar ،Muller-Hinton agar.

SAMPLING RESULTS

40 samples gave the growth of bacteria when cultivated in the agricultural circles described in the sample collection paragraph in the separation of materials and working methods and 80.0% of the total 50 samples were middle urine while the remaining 10 samples and 20.0% did not give any bacterial growth as shown in the table (1-1), which is the result of a fully identical growth by the researcher [11]. Which received 160 positive growth samples of 80.0% and 20% negative growth, which is a high growth result compared to what the researcher found [1].which obtained 86 microbial growth positive samples of 66.15% and did not show 44 germ growth samples of 33.85%.

Table 1-1: Results of transplantation of samples from UTI patients

Transplant Results	Quantity	Percentage (%)
Growth-oriented	40	80.0
Negative Growth	10	20.0
Total	**50**	**100.0**

The growing samples on the agricultural circles showed two types of bacteria that are negative for kram dye as shown in Table (1-2). Escherichia coli's isolation rate was higher than Proteus mirabilis.

Table 1-2: Preparation and ratios of passive bacterial isolates of kram dye

Isolation Type	Quantity	Percentage (%)
Escherichia coli	30	75
Proteus mirabilis	10	25
Total	**40**	**100**

a **b**

Form 1: (a) Shows Escherichia coli bacteria on macConkey agar (b) showsProteu mirabilis bacteria on blood agar

Diagnosis of passive bacteria for cram dye Biochemical tests were conducted to diagnose the negative bacteria of kram dye.

Table 1-3: Vital Chemical Test Results for Bacterial Isolates

Test Bacteria	catalase	oxidase	Indol	Methyl red	Vogas Proskauer	Citrate	Urease
Escherichia coli	+	_	+	+	_	_	_
Proteus mirabilis	+	_	_	+	_	+	+

Bacterial Insulation Resistance to Antibiotics

The results of bacterial isolates showed a different pattern of resistance to antibiotics used as shown in table (1-4) and shape (2-a&b) and the results were interpreted according to [15].

Table 1-4: Sensitivity of isolated bacterial species of people with urinary tract infections to antibodies

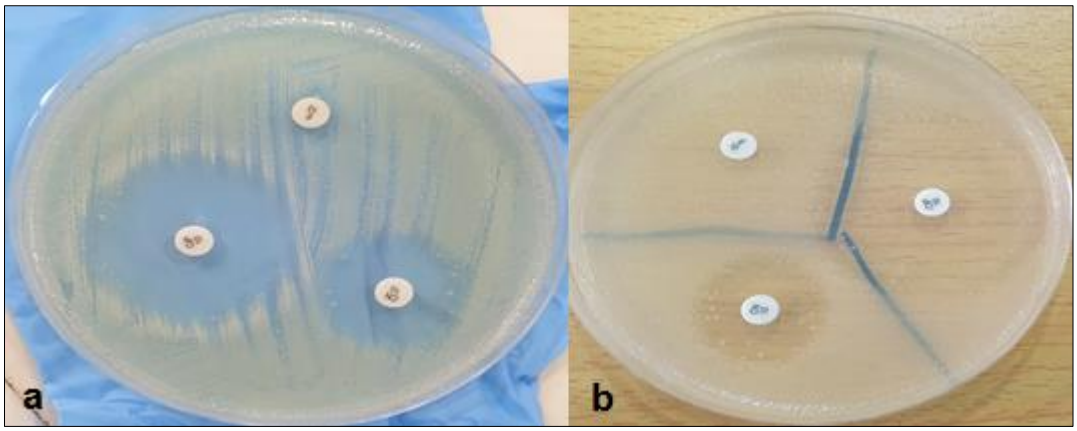
Bacterial isolates		***E.coli***		***Proteus.mirabilis***	
Number of isolations		**30**		**10**	
Antidote	**Response**	**Number**	**%**	**Number**	**%**
Cip	R	0	0	1	10
	S	30	100	9	90
CN	R	8	26.6	2	20
	S	22	73.4	8	80
Ery	R	28	93.3	10	100
	S	2	6.7	0	0

S: Sensitive, R: Resistance CN: Gentamicin, CIP: Ciprofaxcin, E: Erythromycin

Test for the sensitivity of bacterial isolates causing isolated urinary sewage inflammation towards some antibiotics and between Table (1-4) that E.coli bacteria showed absolute sensitivity to 100% anticiprofloxacin, high sensitivity to Gentamicin antibiotic 73.4% and very poor sensitivity to Erythromicin 6.7%. Proteus.mirabilis has shown 90% sensitivity to Ciprofloxacin as well as 80% sensitivity to Gentamicin and 0% absolute sensitivity to Erythromicin.

A study [1]. Showed that the sensitivity of bacteria to antibiotics was an approach to the results of the current study, with E.coli bacteria showing sensitivity to antibiotics Gentamicin, Ciprofaxcin at 92.30% and 66.67% respectively. The results of our current study were an approach to the result [16]. Where the bacteria themselves showed an 11.1% sensitivity to Erythromycin. Proteus.mirabilis The current study showed completely contrary results with the study [16]. Where the bacteria showed an absolute sensitivity to Erythromycin antiretroviral 100% and our results were an approach

to the study [1]. Where the bacteria showed a moderate sensitivity to Gentamicin 75%. The results of our study were different [6]. Against anti-Gentamicin, Ciprofaxcin where bacteria were 32% and 72% sensitive to antibiotics, respectively.



Form 2: (a) *Proteus mirabilis* bacteria sensitivity to antibiotics. (b) *E.coli* bacteria sensitivity to antibiotics

The Impact of Rywas' Water Extract on Bacterial Isolates

The current study of water extract showed a clear difference in the inhibition of the bacterial species under study, as Rheum Palmatum's alcohol extract was more inhibited than the water extract by observing the inhibition diameter in the concentrations 25%, 50%, 100% as in the table (1-5).

The study also showed that the highest inhibition diameter of the water extract of rywas in the 25% concentration and in the 50% concentration was (12 and 18) mm respectively in the coli E type and the lowest inhibition diameter appeared in the 25% concentration and in the 50% concentration in the Proteus bacteria type which is (10 and 15) mm, respectively, and when using the 100% concentration is the highest inhibition diameter in coli E type at 25 mm.

Results from Rywas' alcohol extracts also showed variation in the bacteria inhibition qatar under study With the highest concentration inhibition diameter at 25% for E.coli bacteria at 15 mm, the highest alcohol extract inhibition diameter was at 50% for type E.coli at 20mm and when using a 100% concentration for the alcohol extract of Riwas, the highest inhibition diameter was at type E.coli at 28mm.

Table 1-5: Effect of Rheum Palmatum Aqueous and Alcoholic Extract on Bacterial Isolates

Extracts Bacterial isolates	Liquid			Alcohol		
	Retarding areas in mm					
	25%	50%	100%	%25	%50	%100
E.coli	12	18	25	15	20	28
Proteus	10	15	20	12	18	25

DISCUSSION

The non-growth of some samples may be caused by a viral, fungal or anaerobic bacteria that we cannot isolate by the usual transplant methods used in this study that require transplant circles and special conditions for development or as a result of the patient's use of random antibiotics that led to the disappearance of pathological bacteria [12].

The results of the phenomenal and microscopic tests conducted on developing bacteria (using cram dye) showed that cram dye-negative bacteria grow on McConkey's middle, which does not allow kram dye-positive bacteria to grow. Escherichia coli colonies appeared in pink on the centre of McConkey as a result of their fermentation of lactose sugar, and its medium-sized colonies are regular and dry, humpback. This bacteria is a natural fluorescence found in humans and animals and one of the most urinary inflammatory species as in figure 1-A [13]. Proteus mirabilis has pale colonies on the centre of the macunki because of its inability to brew lactose sugar, which is sticky in shape, movable and is not made up of the corridors, and which is not discounted and shows the phenomenon of ivory as in figure (1-b) [14]. The presence of this type of bacteria in patients with urinary tract infections is due to the fact that it is found in a large proportion of the natural fluorescence of the human being that settles the intestinal canal and is an opportunistic species where it becomes satisfactory when conditions are appropriate [6].

The results of the current study showed that rheumatic plants have an anti-inflammatory and virus effect in general and have a particularly coronavirus effect, possessing antioxidant efficacy and having an effect on hepatitis and kidney

failure. The same study established that this plant is a rich source of antimicrobials because it produces a wide range of secondary compounds as natural protection against microbial attack.

Our results converged with the study [17]. Where inhibitory effects of Riwas extract on bacterial isolates such as Escherichia coli, Bacillus subtilus, Staphylococcus.

The reason for the effectiveness of Riwas extract is because it contains alkaloids, terpenes, which are summarized by the action of alkaloids by stopping the manufacture of nuclear acids in the microscopic living cell through the action of the enzyme co-enzyme produced by the bacterial cell [18]. The role of active compounds in plant extracts in inhibiting the growth of microscopic biology is also attributable to the fact that these nozzles are equal to interaction with cell components or may have special recipes on the bacterial cell wall and suitable transporters transporting their molecules into the cell to stop the action of enzymes, auxiliary enzymes and other effective biological molecules [19].

Increased rates of inhibition diameter for bacteria growth studied by increasing the concentration of extract are due to an increase in the concentration of active compounds in the extract. This result is identical to [20]. which indicated that the increased concentration of extract increases its effectiveness in inhibiting the growth of microscopic biology.

The effective effect of alcohol extract may be due to alcohol's ability to extract as much active substances as possible from used plant tissue, including tatinate compounds, saponates, flavonides and volatile oils [21].

CONCLUSIONS

E.coli bacteria recorded the highest incidence in UTI patients. The anti-Ciprofaxcin was more sensitive to samples taken from other types of antibodies. Medicinal herbs, including riwas, can be a source of effective products against bacterial influence and have importance in the manufacture of medicines.

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