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Research Article

Formulation And Evaluation of Punarnava Syrup for Uti

Komal Chavan, Maya Jadhav*, Shalini Kawade, Rupal Kachkure, Madhavi Kakphale

Gajanan Maharaj College of Pharmacy, Chh. Sambhajinagar

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ABSTRACT

A urinary tract infection (UTI) is an infection in any part of the urinary system. The urinary system includes the kidneys, ureters, bladder and urethra. Most infections involve the lower urinary tract the bladder and the urethra. Women are at greater risk of developing a UTI than are men. If an infection is limited to the bladder, it can be painful and annoying. If treatment is not received, Urinary Tract Infections (UTIs), which are frequent microbial illnesses affecting the urinary system, can lead to discomfort and problems. Because they have antibacterial qualities and can potentially reduce UTI symptoms, natural treatments have been used. Herbal treatments with possible antibacterial effects, such as punarnava, gokshura, guduchi and daruharidra have been used historically. These herbs have ingredients that may aid in the battle against germs in the urinary system, but further research is needed to determine how safe and effective they are. Increasing water consumption is a simple yet effective treatment. When used as the only treatment for acute UTIs, they are frequently less successful than when used as preventative measures or in conjunction with traditional medicines. The main line of treatment for severe or persistent UTIs is still medical intervention with antibiotics to avoid complications and recurrent infections.

INTRODUCTION

UTIs are very common, especially in females. About half of females will have a UTI at some point during their lives. Males can also get UTIs, as well as children, though they only affect 1% to 2% of children. A urinary tract infection (UTI) is an infection in any part of the urinary system. The urinary system includes the kidneys, ureters, bladder and urethra. Most infections involve the lower urinary tract — the bladder and the urethra. Women are at greater risk of developing a UTI than are men. If an infection is limited to the bladder, it can be painful and annoying. But serious health problems can result if a UTI spreads to the kidneys. UTIs are caused by both Gram-

***Corresponding Author:** Maya Jadhav
Address: *Gajanan Maharaj College of Pharmacy, Chh. Sambhajinagar.*
Email : mj6499494@gmail.com
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negative and Gram-positive bacteria, as well as by certain fungi. The most common causative agent for both uncomplicated and complicated UTIs is uropathogenic Escherichia coli.

Causes:

1. Diabetes
2. Advanced age
3. Conditions that affect personal care habits (such as Alzheimer disease and delirium)
4. Problems emptying the bladder completely.

Symptoms: The symptoms of a bladder infection include:

1. Cloudy or bloody urine, which may have a foul or strong odor
2. Low grade fever in some people
3. Pain or burning with urination
4. Pressure or cramping in the lower abdomen or back

Materials:

1.Punarnava: Boerhavia diffusa is a species of flowering plant in the four o'clock family which is commonly known as Punarnava. Punarnava plays a key role in preventing and treating urinary distension, kidney stones, and painful urination.

• Scientific name: Boerhavia diffusa

• Family: Nyctaginaceae

Mechanism of action: Punarnava's Mutral (diuretic) action helps to decrease burning sensations in urinary tract infections. It improves urine flow and relieves the symptoms of a urinary tract infection, such as burning during urination.

3.Varuna: Varuna (Crataeva nurvala) treats urinary tract infections, kidney stones, and bladder disorders.

- Botanical name: Crataeva nurvula
- Family: Capparidaceae
- **Mechanism of action:** Varun can help with urinary tract infection (UTI) as it aids to control the burning sensation and eases the symptoms of UTI due to its diuretic action that increases urine output. Severe UTI is associated with dysuria and painful urination.

Procedure:

Step 1: All herbs are collected.

- Wash thoroughly with water to remove dirt and dust.
- All herbs shade dry for 3-5 days, then crush to coarse powder.
- Grind the dried leaves into a fine powder using mechanical grinder.
- Store the powder in an airtight container further use.

Decoction method

- Weigh dried and powderd herbs according to the measurement.
- Mix all herbs and add to 100ml of distilled water.
- Heat gently and simmer for 30-40 minutes reducing the volume to 25ml.
- Filter through muslin cloth or whatman filter paper to remove the residues.

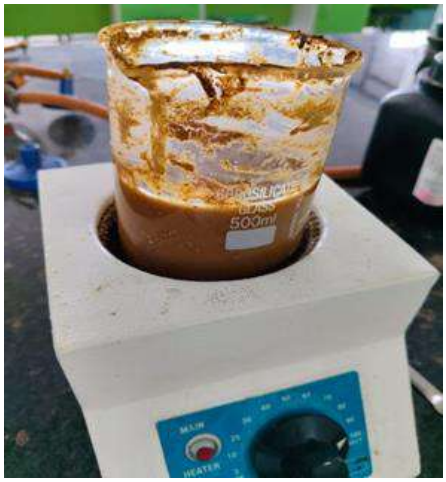
- Collect the clear decoction extract (about 25ml).

STEP 3: Syrup base preparation

Ingredients	Quantity
Sucrose	30g
Methylparaben(preservative)	0.05g
Citric acid (pH adjustment)	0.1g
Distilled water	Q.S to 50ml

Procedure:

1. Dissolve sugar in about 15ml of warm distilled water.
2. Add glycerin, preservatives and citric acid.
3. Mix well until everything is dissolved.
4. Add the 25ml of decoction extract to the syrup base.
5. Make up the final volume to 50ml with distilled water.
6. Mix thoroughly, transfer to amber glass bottle, label properly.



Formulation table

Ingredients	F1	F2	F3
Punarnava	4gm	4.5gm	5gm
Gokshura	4gm	4.7gm	5gm
Varuna	3gm	3gm	5gm
Guduchi	2gm	2.5gm	4gm
Daruharidra	3gm	3gm	3gm
Shatavari	3gm	3gm	3gm
Sugar	20gm	25gm	30gm
Methylparaben (preservative)	0.1g	0.1g	0.1g
Citric acid (pH balance)	0.1g	0.1g	0.1g
Distilled water	50ml	50ml	50ml

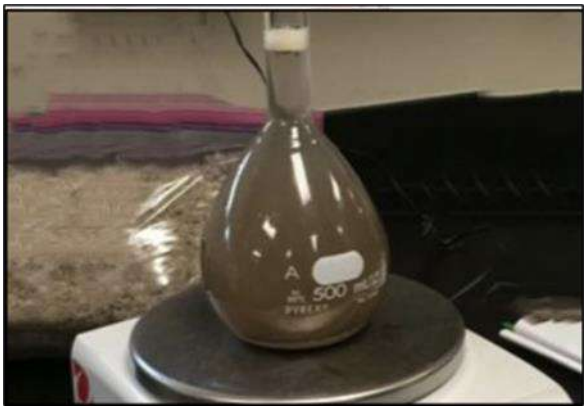
Evaluation test:

1.Specific Gravity

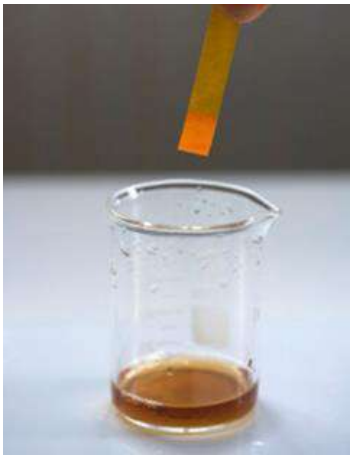
2. pH test

1) Formula of specific gravity:

Specific gravity of liquid under test(syrup)= weight of liquid under test/weight of water ws/W4.



2) Formula of viscosity= x Density of test liquid× Time required fpr flpw test liquid density of water × Time required for flow water. Viscosity of water.



3) PH testing: The syrup PH is 6.3.

Conclusion: The formulation and evaluation of the herbal syrup for urinary tract infection (UTI) were successfully carried out using selected medicinal plants known for their antimicrobial, anti-inflammatory, and diuretic properties. The developed syrup demonstrated desirable physicochemical characteristics such as acceptable pH, viscosity, palatability, and stability. The herbal ingredients, including [insert plant names if known, e.g., varuna, guduchi, Punarnava, etc.], were effectively incorporated into a palatable and stable syrup base.

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