

Natures Dual Remedy : A Review on Polyherbal Plant Showing Antiulcer & UTI Activity

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Abstract :

Polyherbal formulations, composed of multiple medicinal plants, are increasingly recognized for their therapeutic potential in treating peptic ulcers and urinary tract infections (UTIs). Peptic ulcers, which affect up to 10% of the global population, are chronic lesions in the gastrointestinal tract, often exacerbated by factors such as *Helicobacter pylori* infection the long-term use of non-steroidal antiinflammatory drugs (NSAIDs) .Traditional treatments typically involve proton pump inhibitors and histamine-2 receptor antagonists, but these can lead to adverse effects and treatment relapses, prompting interest in alternative, plant-based therapies Research highlights that polyherbal formulations derived from various traditional medicine systems possess bioactive compounds that not only exhibit significant anti-ulcer properties but also facilitate mucosal healing .These herbal combinations are perceived as more affordable and associated with fewer side effects compared to synthetic medications.The recent trend toward investigating the efficacy of these formulations reflects a growing recognition of their potential in clinical applications, particularly for managing conditions such as peptic ulcer disease and UTIs . However, the scientific community acknowledges ongoing controversies regarding the efficacy and safety of polyherbal treatments. Most existing studies are based on in vitro experiments or small-scale clinical trials, necessitating further rigorous clinical research to validate their therapeutic claims and establish standardized formulations . Moreover, the variation in the efficacy of specific herbal combinations, influenced by geographical and methodological factors, underscores the need for comprehensive studies to better understand their pharmacological effects . In summary, while polyherbal formulations represent a promising frontier in the treatment of peptic ulcers and UTIs, further investigation is essential to substantiate their clinical efficacy and safety, thus paving the way for their integration into mainstream healthcare practices.

Keywords: Herbal, peptic ulcer, UTI

Introduction:

Ulcer is a common disorder of the gastrointestinal system, which causes much discomfort to patients, disrupting their daily routines and causes mental agony. It is generally more common in those who keep themselves in hurry, become worry and consume curry [1] . Peptic ulcer disease can be characterized by inflamed lesions or excavations of the mucosa and tissue that protect the gastrointestinal tract. Damage of mucus membrane which normally protects the oesophagus, stomach and duodenum from gastric acid and pepsin causes peptic ulcer[2] Natural products from plants are a rich resource used for centuries to cure various ailments. The use of natural medicine in the treatment of various diseases like peptic ulcer is an absolute requirement of our time [3] Therefore, alternative approach in recent days is the research of medicaments from traditional medicine. The use of phytoconstituents as drug therapy to treat major ailments has proved to be clinically effective and relatively less toxic than the existing drugs. Diverse chemical compounds have been isolated from medicinal plants with antiulcer activity (Lewis and Hanson, 1991). This is an important reason to investigate antiulcer effects in medicinal plants with traditional use in gastric diseases [4]

Types of ulcer

- **Peptic Ulcer[4]**

Gastric Ulcer: Occurs in the stomach lining.

Duodenal Ulcer: Occurs in the upper part of the small intestine (duodenum).

- **Mouth Ulcer (Canker Sores)[5]**

Minor Ulcers: Small and shallow, usually heal on their own.

Major Ulcers: Larger, deeper, and can cause more pain; may take longer to heal.

- **Herpetiform Ulcers:**

Cluster of small, shallow ulcers.

- **Venous Ulcer[6]**

Typically occurs in the lower legs, caused by poor circulation related to venous insufficiency.

- **Arterial Ulcer[6][5]**

Develops due to poor blood flow from narrowed or blocked arteries, often found on feet or legs.

- **Diabetic Ulcer[7]**

Common in diabetics, often on the feet, caused by poor circulation and nerve damage

Types of uti:

Cystitis: A bladder infection that occurs when bacteria move from the urethra into the bladder. It's the most common type of UTI.[8]

- **Urethritis:** An infection of the urethra, the tube that drains urine from the bladder.[9]
- **Pyelonephritis:** A kidney infection that can occur when infected urine flows backward from the bladder into the kidneys. It can also occur when an infection in the bloodstream reaches the kidneys.[10] .

Pathophysiology of ulcer :

A **peptic ulcer** is a break in the mucosal lining of the stomach or the duodenum, which is caused by an imbalance between aggressive factors (like gastric acid) and defensive factors (like mucus and bicarbonate) in the gastrointestinal tract. The main types are **gastric ulcers** (stomach) and **duodenal ulcers** (upper part of the small intestine).

- **Helicobacter pylori Infection:**

H. pylori is a bacterium that colonizes the stomach lining. It disrupts the mucosal barrier by secreting urease, which neutralizes stomach acid and damages epithelial cells. This results in chronic inflammation, which weakens the mucosal defenses. In some individuals, this leads to ulcer formation.[11]

- **Excessive Gastric Acid Secretion:**

The stomach normally produces acid to aid in digestion. When there is excessive secretion, it overwhelms the mucosal defenses. This can be due to various factors like stress, high alcohol intake, or certain medications like NSAIDs (non-steroidal anti-inflammatory drugs), which inhibit prostaglandin synthesis. Prostaglandins normally protect the mucosa by promoting mucus and bicarbonate production, and their inhibition leads to more vulnerability to acid.[11][12]

- **NSAIDs (Nonsteroidal Anti-Inflammatory Drugs):**
NSAIDs inhibit cyclooxygenase (COX) enzymes, which reduce the synthesis of prostaglandins. Without sufficient prostaglandins, the stomach lining becomes more susceptible to damage from gastric acid, leading to ulceration.[13]

Pathophysiology of UTI

Urinary tract infections (UTIs) occur when pathogenic microorganisms, commonly *Escherichia coli* (E. coli), invade the urinary tract. The pathophysiology involves several key steps:

1. **Bacterial Entry:** Bacteria typically enter through the urethra and ascend into the bladder (cystitis). In more severe cases, they can ascend to the kidneys (pyelonephritis).[14]
2. **Attachment:** Bacteria adhere to the uroepithelial cells via specific adhesins on their surface, which allow them to resist flushing out by urine flow.[14]
3. **Inflammation:** The immune response is triggered, leading to local inflammation. This results in symptoms like dysuria (painful urination), increased frequency, and urgency. In more severe infections, fever and flank pain may occur.[15]
4. **Immune Response:** Neutrophils and other immune cells are recruited to the site of infection, and the release of inflammatory mediators causes tissue damage and further contributes to symptoms.[16]
5. **Complications:** In severe or untreated infections, bacteria can spread to the kidneys or bloodstream, leading to conditions like pyelonephritis or urosepsis.[16][14]

Herbal Plant Showing Antiulcer &UTI Activity :

Plant Name	scientific name	ayurvedic role	Pharmacological Activities	Referance
chota gokhru	Tribulus Terrestris	kidney problem	Diuretic	[17]
			diuretic , antibiotic ,antidiabetic , analgesic , anti inflammatory , anticarcinogenic ,antispasmodic,	[18] [19]

			anticancer, antibacterial, anthelmintic,	
			Antibiotic , antiinflammatory ,Analgesic , anticancer ,	[20] [19]
			Diuretic , antibacterial , antiurothilic , anthelmintic	[21] [22][23]
Javkhar	potasium carbonate	pramoting digestion & health function	Diuretic , antiviral , antibiotic , anthelmintic	[24]
			Antibiotic , Anticancer , Antidiabetic , Analgesic , antiinflammatory ,	[25]
			Antibiotic , Antiviral , diuretic , antiinflammatory	[26] [27]
Lakdyapashanbhed	Bergenia ligulata	kidney & bladder stone	diuretic , laxative , antibacterial , antioxidant	[28]
			Antiuro lithic , antihyperurecemic , antidiabetic , analgesic , anticancer	[29]
			antibacterial , analgesic , antioxidant , anticancer ,diuretic	[30] [28]
			anti inflammatory , diuretic , antioxidant , anticancer	[31]
turati lahi	limnophilla indica	astringent	antidiabetic , diuretic , antioxidant , analgesic	[32]
			antibacterial , anti inflammatory , antioxidant , analgesic	[33][34]
			diuretic , antioxidant , analgesic , antibacterial	[35]
Shitalchini	Pipeer Cubeba	reduce inflammation	antihyperurecemic , antioxidant ,analgesic ,diuretic	[36]
			anticancer , antioxidant , antidiabetic , anticancer	[37] [36]

			analgesic , antioxidant , antidiabetic , anticancer	[38]
Velchi	Electria Cardamomum	carminative	antidiabetic , diuretic , antioxidant , analgesic ,diuretic	[39]
		bloating	antiinflammatory , antibiotic , antiviral , analgesic	[40][41]
			diuretic , antioxidant , antibacterial	[42] [39]
Vanshlochan	Bambusa Auridiacea	gastritis	antiulcer , antiinflammatory ,	[43]
		wound healing	Antifertility , Antiulcer	[44]
			Diuretic , Anti microbial , Anti fertility ,Anti inflammatory	[45]
			diuretic, purgative, laxative, antiasthmatic, hepatoprotective, anti-allergic	[46] [47]
			antioxidant , hemolytic , anti-inflammatory antibacterial , antifungal	[48]
			antihelminthic , antiviral, anti-plasmodic, and antihypertensive, anticoagulant, diuretic and anti-tumor	[49]
Aapata		Balance cough energy	Antioxidant , antimicrobial ,diuretic	[50]
			Antitumor ,Anti-inflammatory, Antipyretic, Analgesic ,diuretic	[51]
	Ficus racemosa	Jaundice	anti-bacterial , Anti microbial , Anti hyperglycemic , Anti Inflammatory	[52] [50]
		Inflamatory condition	Anti Diuretic , Anti Inflammatory , Anti Tussive , Anthelmintic	[53] [54]
			Anti ulcer , Anti Ashthmatic ,	[55]

			Hepatoprotective	
			Anti diuretic , Anti ulcer , Anti Bacterial , Anti pyretic , Analgesic	[56] [55]
Kurtu			ANTIBACTERIAL, ANTIFUNGAL & CYTOTOXIC ACTIVITY	[57]
palas	Butea monosperma	skin disease	anti-diabetic, anti-cancer, anti-inflammatory, anti-asthmatic, anti-oxidant, anti-convulsant, anti-microbial, anti-viral and hepatoprotective properties	[58] [59]
		Respiratory Disease	Anti ulcer , Anti Inflammatory , Anti diabetic , Anti viral ,Anti convulscent , Anti Fungal	[60]
			antibacterial, antifungal, hypoglycemic, anti-inflammatory activities	[61] [60]
Talispatra	Taxus Baccata	Respiratory disease , flu ,coomon cold	antinociceptive, anti-ulcerogenic, antimicrobial, cytotoxic, and antioxidant	[62]
Karuvelam	Acacia Arabica	strengthen the teeth and gum problems.	Antidiabetic , Antiulcer,Anti microbial , anti fertility , Antibacterial , antiviral , Antifungal	[63] [64]
		Reduces plaque formation.	antioxidant, antipyretic, antileprosy, antidiarrheal, antimicrobial, antibacterial, antifertility, anticancer Antiulcerogenic	[65]
		Reduces inflammation of the gum		[66] [65]
Bael Tree	Aegle Marmelos	loss of appetite	<u>antibacterial, antiviral, antidiarrheal, gastroprotective, anti-ulcerative</u>	[67]
		digestive problems	Anti oxidant , anti Microbial , Anti diabetic , anti ulcer , Anti cancer ,Anti Thyroid, Anti Fungal	[68] [69]

		treating cholera.	antidiarrheal Diuretic ,Ulcer healing, Antithyroid , Antifungal , Antimicrobial , Antioxidant	[70]
			Antiulcer ,Antibacterial , antiviral , Anticancer , Anti Oxidant ,Anti Diabetic	[71] [72]
Garlic	Allium Sativum	Digestion	Antibiotic , Anti Tumor , Anti bacterial , Diuretic , Anti Hypertensive	[73]
		Remove blockage from blood vessels	antioxidant, anti-diabetic anti-inflammatory, antibacterial, antifungal, immunomodulatory, cardiovascular protective, anticancer, renal protective	[74] [75]
		Fungicidal		
		Antiseptic	,	
Aloevera	Aloe Barbadensis Miller	liver disease	antiulcer	[76]
		skin condition	Antiulcer	[77]
		wound healing	Antiulcer , Antidiabetic	[78]
			Antiulcer effect , Hepatoprotective , Anti Diabetic , Anti inflammatory , Antioxidant	[79] [78]
			Antiulcer , Antibacterial ,Antiviral,Antifungal , AntiDiabetic , Anti Inflammatory	[80]
			Anti ulcer ,Anticancer ,Anti inflammatory , Antioxidant ,Analgesic	[81]
			Antiulcer , Antimicrobial . Antidiabetic , Antitumor , Antiseptic	[82]
Custard Apple	Annona	skin disease	Anti ulcer , Antioxidant , Antidiabetic , Hepatoprotective	[83]

	Squamosa		,Antitumor	
		Expectorant	Antiulcer , Antitumor ,Antibacterial , Antidiabetic	[84]
		strengthens cardiac muscle	Antiulcer , Antimalarial , Antiviral , Antidiabetic , Antithyroid , Antibacterial ,Antifungal	[85]
			antimicrobial, antifungal, anti- inflammatory, anticancer, antiulcer, antidiabetic, antidiarrheals, antiplatelet, antioxidant	[86] [87]
Neem	Azadirachta Indica	Reduce skin blemishes	Antiulcer	[88]
		Repair damaged cells	Antiulcer , Antifertility , Antibacterial , Antimalarial ,Antidiabetic , Antifungal , Antiinflammatory	[89] [90]
		Blood purifier	Antiulcer , Antibacterial , Antifungal , Analgesic , Antiviral , Antiinflammatory , Hepatoprotective	[91]
		Nourishing hair	anti-inflammatory, antihyperglycaemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic and anticarcinogenic	[92]
			antioxidant, anticancer, antibacterial, antiviral , Antiulcer	[93] [94]
Kanchnar	Beuhinia Variagata	Treat tumor	Anti ulcer , Antidiabetic , Anticancer , Antitubular , Anti Inflammatory	[95]
		reduce cystic swelling		
		pcos		
Haritaki	Terminalia Chebula	Support hair growth	anti-bacterial, anti-cancerous, anti- fungal, anti-diabetic, anti-microbial, anti-mutagenic, antioxidant, anti-	[96]

			ulcer, wound healing and anti- viral activity	
		Eliminating toxin from liver	Anti ulcer , Anti - convulscent , Antibacterial , Anti - Oxidant , Anti Diabetic	[97] [96]
		Boost Immunity	Anti ulcer , Anti Aging , Anti - Mutagenic , Anti Carcinogenic , Anti-arthritic , Anti Fungal	[98]
		Helpful in constipation	anti-ulcerogenic , anti-arthritic , Anti-lipid peroxidation , Anti Oxidant	[99] [100]
		Prevent cough and cold		
		Fight with skin allergies		
Tamarind	Tamarindus Indica	improve metabolism	Analgesic , Anthelmintic ,Antidiabetic , Antiulcer , Antiatherosclerosis , Antioxidant	[101]
		indigestion	antidiabetic, hypolipidemic, hepatoprotective, anti-ulcer, anti-inflammatory, analgesic, antivenom, antimicrobial, antihelmintic	[102] [103]
		constipation		
		reduce inflammation & constipation		
Manathakkali Keeral	Solanum Nigrum	Indigestion	antitumorogenic, antioxidant, anti-inflammatory, hepatoprotective, diuretic, and antipyretic	[104]
		constipation	antioxidants hepatoprotective, anti-tumor, cytostatic, anti-convulsant, anti-ulcerogenic and anti-inflammatory	[105]
			hepatoprotective, antiulcerogenic ,	[106]

			neuropharmacological, cytoprotective, antinociceptive, Anti-inflammatory	[105]
Sal tree	Shorea Robusta	reduce swelling	Antiulcer , Analgesic , Antipyretic , Anti Obesity , Anti Inflammatory , Anti Microbial	[107]
		control bleeding	analgesic, anticancer, anticonvulsant, anti-diabetic, anti-hyperlipidemic, anti-inflammatory, antimicrobial, antioxidant, antipyretic, antiulcer	[108] [109]
			Antiulcer , Antioxidant , Antimicrobial , Antiinflammatory , Analgesic	[110]
Akathi	Sesbania Grandiflora	Microbial Infection	Antiulcer , Antimicrobial , Antioxidant , Anticancer , Anticonvulscent	[111]
		Stomach Diseases		

Marketed Herbal Formulation of Antiulcer :

Brand Name	Active Ingredients	Mfg.Company	Referance
Pepticare	Glycyrrhiza glabra, Emblica officinalis and Tinospora cardifolia, Sootsekharras, Praval Bhasma, Kapardi Bhasma (Calcium), SuvarnaMakshikbhasma (Ferri sulfuratum) and Sodhit gairik (silicate of alumina and oxide of iron)	Ayur Herbals Pvt.Ltd, Baroda	[112]
Zulcer (Capsule)	Phyllanthus emblica, Picrorrhiza kurroa, Nardostyichis jatamansi, Tinospora codifolia, Caryophyllus aromaticus, Hyoscymus niger, Sesbania	Guphic Pharma, Ahmedab-ad	

	grandiflora, Foeniculum vulgare, Acorus calamus, Celastrus panniculatus, Calx of Oyster shells, Calx of Conch shells, Calx of Cowry, Calx of Gypsum, Calx of Corals, Calx of Chalcopyrite, Kamdudha Rasa and Sutshekhar Rasa.		
Zulcer (Syrup)	Phyllanthus emblica, Tinospora codifolia, Glycyrrhiza glabra, Asparagus racemosus, Garcinia indica, Hedychium spicatum and Zingiber officinale	Guphic Pharma, Ahmedab-ad	

Conclusion:

Polyherbal formulations (PHFs) are a composite of multiple herbs utilized in traditional medicine systems, notably Ayurveda, recognized for their therapeutic effects, particularly in treating peptic ulcers and urinary tract infections (UTIs). These formulations harness the synergistic properties of various plant constituents to enhance therapeutic efficacy while potentially minimizing side effects practices. Recent systematic reviews have demonstrated the anti-ulcer and UTI activities of PHFs, underscoring their potential as effective alternatives to conventional pharmacological treatments. As interest in natural remedies continues to rise globally, understanding the scientific basis for the efficacy and safety of PHFs becomes increasingly important for their integration into contemporary healthcare

Studies have shown formulations containing herbs like Yashtimadhu and Shatavari exhibiting significant therapeutic effects, supported by acute toxicity evaluations confirming their safety profiles in animal models. However, despite promising findings, there remains a critical need for rigorous clinical trials to validate these formulations against established treatment protocols, as current evidence primarily stems from preclinical studies. The safety and side effects associated with PHFs warrant close scrutiny. Adverse reactions, although infrequently reported, can include severe health issues stemming from factors such as adulteration and improper dosage management. Furthermore, the lack of standardized manufacturing practices poses challenges in ensuring product consistency and quality, emphasizing the necessity for comprehensive pharmacovigilance in herbal medicine. Ultimately, while PHFs represent a promising avenue in the management of ulcers and UTIs, significant hurdles remain, including limited research on their efficacy, quality control issues, and potential interactions with conventional medications. Addressing these challenges is vital for the broader acceptance and application of these herbal formulations in clinical settings.

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