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A Review of the Efficacy and Mechanisms of Herbal Approaches in the Treatment of Urticaria

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Abstract: Urticaria (hives) is a common skin condition characterized by itchy, red welts. While conventional treatments like antihistamines and corticosteroids are commonly used, their side effects and limited long-term relief have led to a growing interest in herbal topical treatments. Urtica dioica (stinging nettle), along with other herbs like Neem, aloe Vera, and chamomile, is known for its anti-inflammatory, antihistaminic, and soothing properties, which can help manage the symptoms of urticaria. This review paper focuses on the use of herbal ingredients in topical formulations for the treatment of urticaria. It examines the active compounds in Urtica dioica and other herbs, their mechanisms of action, and the scientific evidence supporting their efficacy. Additionally, the benefits, safety, and challenges of using these herbal treatments topically are discussed. This review aims to provide insights into the potential of herbal topical remedies for urticaria and offers directions for future research in this area.

Key words: Urticaria, herbal remedies, urtica dioica.

INTRODUCTION

Urticaria, often known as hives, is a common and frequently upsetting skin ailment that is typified by the abrupt appearance of red, elevated, and itchy welts or wheals on the skin. These lesions come in different sizes, can develop anywhere on the body, and can combine to create larger swollen regions. Angioedema, a more severe tissue swelling that frequently affects the face, lips, tongue, or extremities, can occasionally accompany urticaria. Urticaria is divided into two types: acute urticaria, which goes away in less than six weeks, and chronic urticaria, which lasts longer. Chronic urticaria is further divided into two types: chronic inducible urticaria (CIU), which is brought on by particular stimuli like pressure, and chronic spontaneous urticaria (CSU), which happens without a discernible external cause. sunshine, heat, or cold. Mast cells and basophils are activated in the pathophysiology of urticaria, releasing histamine and other inflammatory mediators. This causes the characteristic redness and swelling by increasing vascular permeability. Urticaria can be triggered by a wide range of things, including physical and environmental conditions, drugs, dietary allergies, and infections. While drugs like antibiotics and NSAIDs or allergens like nuts, shellfish, and insect stings are common triggers in adults, viral infections are a significant cause of acute episodes, particularly in children. However, autoimmune mechanisms are frequently associated to chronic urticaria, with auto antibodies against IgE or its People of all ages and races can get urticaria, but children and young adults are more likely to get acute urticaria, while adults—especially women—are more likely to get chronic urticaria. Urticaria is a common ailment around the world; the lifetime prevalence of acute urticaria is believed to be 10–20%, whereas the prevalence of chronic urticaria is roughly 0.5–1%. Severe episodes of urticaria are usually not fatal, but they might cause consequences like angioedema or anaphylaxis that need to be treated right once. Urticaria has a substantial negative influence on patients' quality of life in addition to its medical symptoms, frequently leading to emotional anguish, sleep issues, and limitations in day-to-day activities. The relevance of comprehending urticaria's causes, classifications, and therapeutic techniques is highlighted by the increasing awareness of its incidence and burden. Antihistamines should be used as the first line of treatment, and triggers should be identified and avoided if feasible. Advanced treatments such immunosuppressant's or omalizumab, an anti-IgE monoclonal antibody, may be required for chronic and refractory instances. Physicians can enhance the quality of life and results for urticaria sufferers by treating both its physical and psychological aspects.

Fig -1 Urticaria disease

EPIDEMIOLOGY

The dermatological disorder known as urticaria, or hives, is typified by the abrupt emergence of elevated, red, and itchy welts on the skin. Acute urticaria, which lasts less than six weeks, and chronic urticaria, which lasts longer than six weeks, either constantly or occasionally, are the two main categories. With a lifetime frequency of 10–20% in the general population, acute urticaria is very prevalent. It is more common in children and young adults and is commonly brought on by food allergies like nuts and shellfish, viral infections, or drugs like NSAIDs and antibiotics. Conversely, chronic urticaria affects between 0.5–1% of people worldwide and is more common in adulthood, especially women, who are affected at over twice the rate of men. The two types of chronic urticaria are chronic inducible urticaria (CIU), which is brought on by physical stimuli like cold, pressure, or sunshine, and chronic spontaneous urticaria (CSU), which makes up 70–80% of cases. About 30–50% of CSU instances are caused by autoimmune mechanisms, and patients with autoimmune diseases frequently have other concomitant problems such thyroid autoimmunity. Because it is chronic, the ailment has a great impact on patients' quality of life and results in large financial consequences. Around the world, Acute urticaria has become more common, which has been linked to an increase in environmental triggers and dietary allergies. Urticaria usually poses minimal threat to life, but severe instances might cause angioedema or anaphylaxis, which calls for prompt medical attention. It is essential to comprehend its epidemiology and causes in order to diagnose, treat, and improve patient outcomes.

PREVALENCEAND INCIDENCE

Urticaria,a condition affecting 86million cases and160 million annually,hasdistinct subtypes within different populations.The highest prevalence of urticaria is in children under five years old,while urticaria,particularly cholinergic urticaria(CSU), is most prevalent in women over 30 years old.Adult patients with CSU are older and have a longer age of disease onset.All types of urticaria are more prevalent in women than in men, except for cholinergic urticaria (CholU). Ethnicity is affected, but. According to several research, non-white patients had a higher prevalence of AU and CU. All urticaria and AU have lifetime prevalences of 3–22% and 6–19%, respectively. With point prevalences ranging from ≤1.5% in the USA and Europe to 3–4% in Mexico, Korea, and China, the overall lifetime prevalence of CU is 4.4%.Current prevalence of urticaria is consistent between 1990 and 2017, with no significant changes observed between 1990 and 2017. The most prevalent types of urticaria are symptomatic dermographism, CholU, and ColdU in both adults and children. Aquagenicurticaria, solar urticaria, heat urticaria, vibratory angioedema, and contact urticaria are rare,occurring in about 2–3% of all CU cases. Rarely seen as a separate condition, delayed pressure urticaria coexists with CSU in as many as 36% of CU patients.

ETIOLOGY OF URTICARIA

Urticaria, also known as hives, is a complex condition triggered by various external and internal triggers that activate mast cells, leading to the release of histamine and other inflammatory mediators. It is a complex condition with a wide range of etiological factors, including physical factors, infections, autoimmune disorders, medications, and idiopathic causes. Physical factors include dermatographism, delayed pressure, cold urticaria, cholinergic urticaria, solar urticaria, and vibratory urticaria. Infections, both bacterial and viral, are known triggers, with pathogens such as Hepatitis B, Herpes simplex, and Epstein-Barr being implicated. Autoimmune disorders, such as autoimmune thyroid disease, systemic Lupus Erythematosus, and rheumatoid arthritis, contribute significantly to the path physiology of persistent urticaria.

PATHOPHYSIOLOGY

The disorder known as urticaria, or hives, is characterized by the abrupt development of angioedema, wheals, or both. The pathophysiological mechanisms involve complex interactions between the immune system, mast cells, and various triggers. The hallmark of urticariais the activation and degranulation of mast cells, leading to the release of histamine and other pro-inflammatory mediators Mast cells play a central role in the pathogenesis of urticaria, which are widely distributed throughout the skin, mucosal tissues, and other organs. Upon activation, mast cells release various mediators, such as histamine, prostaglandins, leukotrienes, cytokines, andproteases, which contribute to the clinical manifestations of urticaria, such as vasodilatation, increased vascular permeability, and sensory nerve activation Urticaria can be mediated by both immunological and non-immunological mechanisms. Immunological mechanisms include IgE-mediated reactions, where specific IgE antibodies bind to allergens and cross-link the high-affinity IgE receptors (FcεRI) on mast cells, leading to degranulation. Autoimmune mechanisms involve the presence of autoantibodies that target FcεRI or IgE itself, causing chronic activation of mast cells even in the absence of external allergens. Non-immunological triggers can also occur, such as direct mast cell activators and pseudoallergens, which mimic the action of allergens but do not involve specific IgE antibodies.

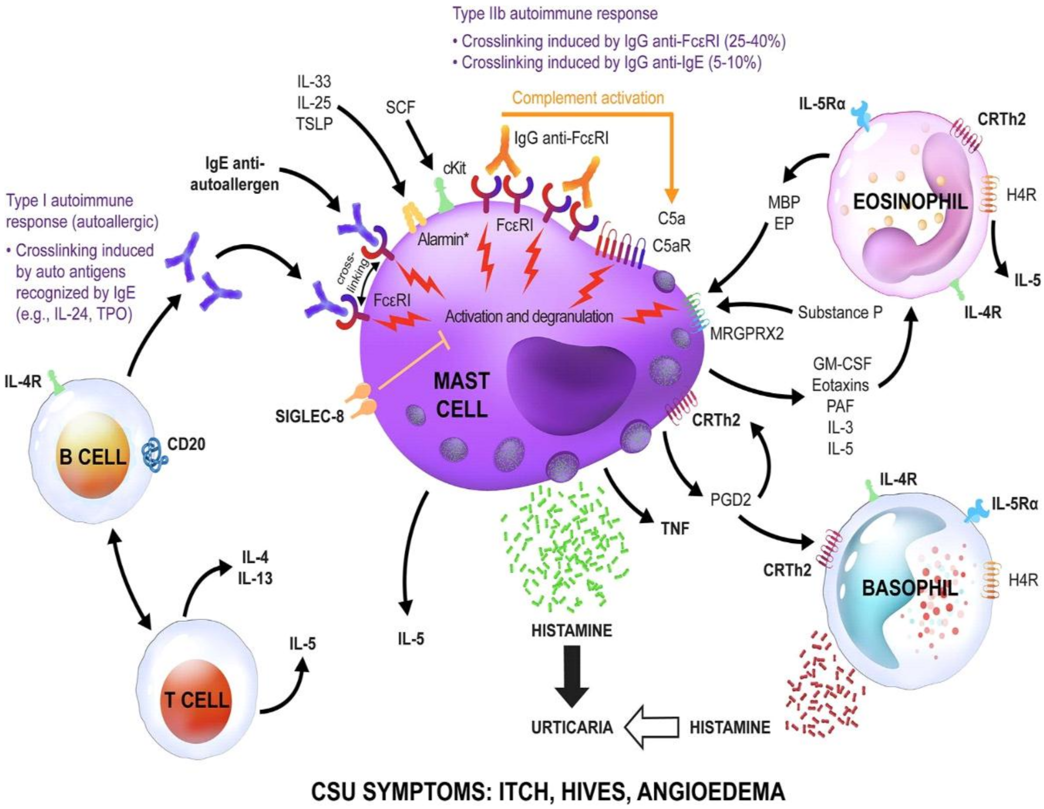

Fig-2 Pathophysiology of urticaria

Table1.classification of urticaria on the basic of its duration, frequency and causes.

Types of disease	Duration	Frequency
A. Spontaneous urticaria		
Acute urticaria	<6weeks	Spontaneous wheals appearing most days
Chronicurticaria	>6weeks	Spontaneous appearance of wheals
• Chronic continuous		Daily or on most days of the week
• Chronic recurrent urticaria		Symptom free intervals ranging from days to weeks

Physical urticaria 1 • Dermographic urticaria • Delayed pressure urticaria • Coldcontact urticaria • Heatcontact urticaria • Solar urticaria • Vibratory urticaria/angioedema	Mechanical shearing forces (wheals arising after 1-5 min) Vertical pressure (wheals arising with a 3-8 h latency) Cold air/water/wind Localized heat UV and /or visible light Vibratory forces, e.g. pneumatic hammer	
c. Special types of urticaria • Cholinergic urticaria • Adrenergic urticaria • Contacturticaria (allergic or pseudoallergic) Aquagenicurticaria		
D. Different diseases related to urticaria for historical reasons • Urticaria pigmentosa (mastocytosis) • Urticarial vasculitis Familial cold urticaria (avasculitis)		

MANAGEMENTAND TREATMENTS OF URTICARIA

Table- 2 strategies for managing and treating urticaria

Category	Treatment Options
First-Line Treatment	Non-sedatingH1-antihistamines (e.g., cetirizine, loratadine, fexofenadine)
Second-Line Treatment	H2antihistamines,Leukotriene receptor antagonists (e.g.,montelukast),Shortcoursesof systemic corticosteroids
Herbal and Plant-Based Treatments	Aloe Vera, , Stinging nettle, Neem oil, Curcuma longa (turmeric)
Third-Line Treatment	Omalizumab (monoclonal antibody),Immunosuppressant's (e.g., cyclosporine)
Dietary and Nutritional Considerations	Low-histamine diet, Elimination diet, Anti-inflammatory diet, Adequate hydration
Yoga and Lifestyle Adjustments	Regular exercise, Stress management techniques (yoga, meditation),Good sleep hygiene, Avoidance of known triggers

Herbal and Plant-Based Treatments

Herbal medicine offers a complementary approach to managing urticaria, focusing on natural compounds with anti-inflammatory, antihistamine, and immunomodulatory properties.

PLANT PROFILE:

Stinging nettle:

Stinging nettle (*Urtica dioica*) is a herbaceous plant with stinging hairs that cause skin irritation. Rich in vitamins, minerals, and antioxidants, it's used in traditional medicine, cooking (when neutralized), and even textiles. Commonly found in nutrient-rich soils, it has anti-inflammatory and detoxifying properties but requires careful handling to avoid irritation.

Fig – 3

1. Medicinal properties of stinging nettle:

Stinging nettle has anti-inflammatory, diuretic, and antioxidant properties. It aids in arthritis, allergies, blood sugar control, and anemia. It supports hair, skin, prostate, and digestive health. Commonly used as tea, capsules, or topical remedies, it’s a versatile medicinal herb.

2. Scientific classification of stinging nettle

Kingdom	Plantae
Class	Eudicots
Order	Rosales
Family	Urticaceae
Genus	Urtica
Species	Various, e.g., *Urtica dioica*

Clinical trial

Stinging Nettle	An investigation into psoriasis 53 patients, ages 11 to 63, from private dermatological clinics in Kirkuk and Baghdad participated in the study. Five groups of patients were formed according to the size of the lesion. The ointment was made by combining Vaseline with Urtica dioica leaves, and it was used twice a day for six months.Weinstein's four grades were used to evaluate the treatment's effectiveness: cleared, substantial improvement, moderate improvement, and minimal or no change. The topical application of Urtica dioica proved to be successful, according to the study.

CONCLUSION

This review discusses the use of herbal remedies in managing urticaria, focusing on a topical formulation based on natural ingredients with therapeutic and anti-inflammatory properties. Preliminary studies suggest it can alleviate symptoms like itching and skin irritation. The product is effective for acute episodes and safe for long-term use, but further testing and clinical trials are needed before widespread application. This formulation has significant potential as an alternative or complementary option in herbal therapeutics.

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