

URTICARIA CAUSED BY PLANT *TRAGIA INVOLUCRATE* AND THERAPY

Dr. Viral A. Prajapati^{1*} and Dr. Dhrubo Jyoti Sen

¹Shree Swaminarayan Sanskar Pharmacy College, Near Zundal Circle, S. P. Ring Road, Between Chandkheda-Adalaj, Zundal, Gandhinagar-382421, Gujarat, India.

²School of Pharmacy, Techno India University, Salt Lake City, Sector-V, EM: 4/1, Kolkata-700091, West Bengal, India.



***Corresponding Author: Dr. Viral A. Prajapati**

Shree Swaminarayan Sanskar Pharmacy College, Near Zundal Circle, S. P. Ring Road, Between Chandkheda-Adalaj, Zundal, Gandhinagar-382421, Gujarat, India.

Article Received on 21/04/2025

Article Revised on 13/05/2025

Article Published on 02/06/2025

ABSTRACT

A nettle sting can cause urticaria (also known as hives), a skin reaction characterized by raised, itchy, and red welts. These welts are similar to the raised areas you'd see from a typical insect bite. Urticaria can be caused by various factors, including allergies and exposure to certain substances. Hives is a rash of round, red welts on the skin that itch intensely, sometimes with dangerous swelling, caused by an allergic reaction, typically to specific foods.

KEYWORDS: Urticaria, Allergy, Formic acid.

INTRODUCTION

The scientific name for the plant "Indian stinging nettle" in English is *Tragia involucrata*. It's also referred to as "climbing nettle" or "canchorie root-plant". The plant's family is Urticaceae. Formic acid is the acid present in the stinging hair of nettle leaves. The primary acid found in a nettle sting is methanoic acid, also known as formic acid. This acid is present in the stinging hairs of the nettle plant and is responsible for the burning, tingling sensation and rash caused by the sting. But as they contain histamine and other chemicals, it is the histamine that causes the initial reaction when you are stung. *Tragia involucrata*, the Indian stinging nettle, is a species of plant in the family Euphorbiaceae. It is the

most used species of *Tragia* in ethnomedicinal and ethnopharmacological applications.

Morphology: *Tragia involucrata* is a slender, twining herb with stinging hairs. Leaves 6-10×3-5.5 cm, ovate or elliptic, base acute or rounded, margin serrate, apex acuminate, hispidulous on both sides; petiole to 2.5 cm long. Spikes axillary, monoecious, to 2 cm long; male flowers above, female flowers 1-2, at the base. Male flowers c. 1.5 mm across; bracts spatulate; tepals 3, spreading; stamens 3, anthers sub-sessile. Female flowers c. 3 mm across, ebracteate; tepals 6, c. 1 mm long, ovate-lanceolate, enlarged and spreading in fruits; style 3, spreading. Capsule c. 0.6×1 cm, 3-lobed, hispid. Seeds globose.^[1]

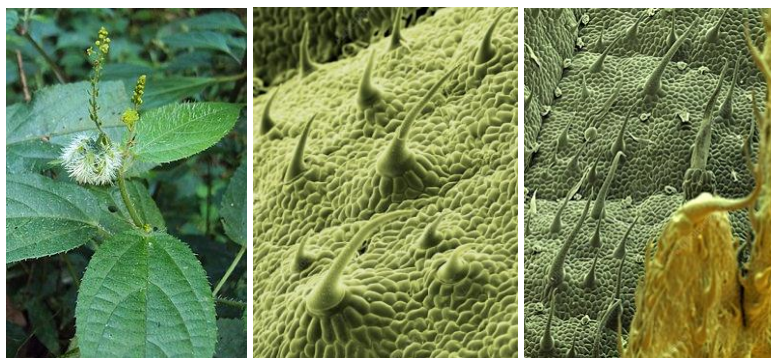


Figure-1: Nettle Sting Plant and SEM of Sting.

If you have a nettle allergy, you might experience these symptoms after inhaling nettle pollen or even brushing against the plant (though the symptoms from contact

would likely be dominated by the stinging sensation): Runny or stuffy nose. Itchy, watery eyes. Sneezing. Coughing. Stinging nettles can cause a rash and other

symptoms if people touch them. The reason for this is that stinging nettles contain fine hairs and chemicals that irritate human skin. One of these chemicals is formic acid, which causes the painful rash. The nettle leaf causes a red, raised rash in any areas that come into contact with the plant, which grows throughout the U.S. and Europe. The rash doesn't spread but can last for about 24 hours. 1 Unlike Wash it. Soap is also an alkaline. Run cold water over your sting, then use a soft tissue, cold water, and some diluted dish soap to clean the area. If you want to be thorough, try using sticky tape or a wax strip to remove any of the nettle's hairs that might still be in your skin. Other rashes from weeds and plants, stinging nettle rash appears soon after you come

into contact with the plant. Board-certified dermatologists say rashes with these features need medical attention: A rash over most of your body. A rash that blisters or turns into open sores or raw skin. Fever or illness with a rash. Lotions with the active ingredient calamine (an anti-pruritic or anti-itching component) can provide some relief to the painful, tingling, red rash caused by contact with stinging nettle. The use of topical corticosteroid creams may also help reduce the pain and inflammation associated with stinging nettle rashes. Board-certified dermatologists say rashes with these features need medical attention: A rash over most of your body. A rash that blisters or turns into open sores or raw skin. Fever or illness with a rash.



Figure-2: Rash Caused Formic Acid Secretion.

Taxonomy:

Kingdom: Plantae

Clade: Tracheophytes

Clade: Angiosperms

Clade: Eudicots

Clade: Rosids

Order: Malpighiales

Family: Euphorbiaceae

Genus: *Tragia*

Species: *T. involucrata*

Binomial name: *Tragia involucrata* L.

Treatment

- Baking soda mixed with water.
- Cool compresses or ice.
- Cooling agents like menthol.
- Oral antihistamines.
- Topical anesthetics.
- Topical hydrocortisone creams.

1. Avoidance:

- Identify triggers: Work with a healthcare professional to identify specific allergens that trigger your reactions.
- Reduce exposure: Minimize contact with allergens like pollen, dust mites, pet dander, or mold spores.
- Keep windows closed: During high pollen seasons, keep windows closed to prevent pollen from entering your home.
- Use air purifiers: Air purifiers with HEPA filters can remove allergens from indoor air.
- Wash bedding and curtains: Wash bedding and curtains regularly to remove dust mites and mold spores.

- Avoid activities that stir up allergens: Refrain from gardening, lawn mowing, or other activities that can release allergens into the air.

2. Medications

- Antihistamines: These medications help reduce symptoms like itching, sneezing, and runny nose.
- Nasal corticosteroids: These sprays can help reduce nasal inflammation and congestion.
- Decongestants: These medications can help relieve nasal congestion.
- Leukotriene modifiers: These medications can help reduce inflammation in the airways.
- Emergency epinephrine: If you have severe allergies, you may need to carry an emergency epinephrine shot.

3. Immunotherapy

- Allergy shots (allergen immunotherapy):
- This treatment involves gradually exposing your body to small amounts of the allergen over time, desensitizing your immune system.
- Sublingual immunotherapy (SLIT):
- This involves placing a tablet under the tongue until it dissolves, gradually exposing you to the allergen.

4. Other strategies

- Manage stress: Stress can worsen allergy symptoms, so try to manage stress through techniques like exercise, sleep, or meditation.
- Stay hydrated: Dehydration can worsen allergy symptoms, so drink plenty of water.
- Consider natural remedies: Some natural remedies, like quercetin and vitamin C, may help reduce allergy symptom

- Nasal rinses: Rinsing your sinuses with a saline solution can help remove allergens and clear nasal passages.

Important note: While these strategies can significantly improve your allergy symptoms, it's crucial to consult with a healthcare professional to determine the best course of treatment for your specific allergies. Lotions with the active ingredient calamine (an anti-pruritic or anti-itching component) can provide some relief to the painful, tingling, red rash caused by contact with stinging nettle. The use of topical corticosteroid creams may also help reduce the pain and inflammation associated with stinging nettle rashes.^[2]

CONCLUSION

A nettle sting rash, also known as hives or urticaria, is a skin reaction characterized by raised, itchy bumps or welts. It occurs when the body releases histamine in response to a trigger, like an allergy or medication.

Symptoms:

- Raised bumps or welts: These are often red or skin-colored and may be itchy or sting.
- Redness: The skin around the bumps may also appear red.
- Stinging or burning sensation: A stinging sensation may be felt upon initial contact with the nettle.
- Itchiness: The rash is usually itchy, but may also sting.

Causes

- Allergies: Nettle stings can trigger allergic reactions in some individuals.
- Medications: Certain medications can cause hives as a side effect.
- Infections: Some infections can trigger hives.
- Physical stimuli: In some cases, hives can be caused by physical stimuli like pressure or temperature changes.

Treatment

- Wash the affected area: Wash the area with soap and water as soon as possible.
- Cooling the skin: Applying a cold compress or damp cloth can help soothe the skin.
- Avoid scratching: Scratching can worsen the irritation and increase the risk of infection.
- Antihistamines: Antihistamines can help relieve itching and other symptoms.
- Topical creams: Creams like calamine lotion or hydrocortisone can help reduce redness and itching.
- Severe allergic reactions: In rare cases, nettle stings can trigger severe allergic reactions requiring immediate medical attention. Symptoms of a severe reaction include difficulty breathing, wheezing, and swelling of the mouth or throat.

When to seek medical attention:

Severe allergic reaction: If you experience difficulty breathing, swelling of the throat or mouth, or other signs of a severe allergic reaction, seek immediate medical help. Persistent symptoms: If the rash doesn't improve within a couple of days or if symptoms worsen, consult a doctor.

Underlying condition: In some cases, hives may be a symptom of an underlying condition, so it's important to consult a doctor to rule out other potential causes.

REFERENCES

1. Duarte-Casar, R., Romero-Benavides, J.C., Tragia L. Genus: Ethnopharmacological Use, Phytochemical Composition and Biological Activity. *Plants*, 2021; 10(12): 2717-2722.
2. Jafilan, L; James, C. "Urticaria and Allergy-Mediated Conditions". *Primary Care.*, 2015; 42(4): 473–83.