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**The characteristics and  
treatment of contact dermatitis  
caused by**

# POISON IVY

**and its relatives.**

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**Program Authors:**

Ron Gasbarro, PharmD, MS Journ [www.rx-press.com](http://www.rx-press.com), Principal  
Thomas W. McGovern, MD, Volunteer Clinical Assistant Professor of Dermatology, Indiana University School of Medicine.

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# The characteristics and treatment of contact dermatitis caused by **POISON IVY** and its relatives.

Ron Gasbarro, PharmD, MS Journ www.rx-press.com, Principal

Thomas W. McGovern, MD, Volunteer Clinical Assistant Professor of Dermatology  
Indiana University School of Medicine

## INTRODUCTION

Consider the number of chemical and environmental assaults the skin endures on a daily basis – detergents, smog, chlorine, UV light, and those little soaps your Aunt Velma has in the bathroom – and you can appreciate that organ’s resiliency and restorative ability. Yet, certain substances exist that can defy the skin’s capacity to deflect their toxic nature. The skin rebels with irritating and often painful results. The consequence is contact dermatitis. And it can hurt.

Contact dermatitis is an um-

brella term for the skin reactions caused by being exposed to substances the body innately rejects. Dermatitis, in general, is a noninfectious, inflammatory dermatosis (eruption) in which the affected skin is erythematous (a diffused inflammation that forms rose-colored patches of variable size). These dermatitides (plural of dermatitis) are patterns of skin manifestations rather than a specific disease and can be acute or chronic. To put it plainly, dermatitis is “a skin inflammation from whatever cause.”

Contact dermatitides can be

caused by irritants or by allergens. Irritant dermatitis can be either primary in nature, in which the substance causes a reaction on first exposure, or secondary if the substance is used repeatedly. Allergic contact dermatitis can be sudden or can manifest over a few days before reaching its most severe state. **Table 1** gives examples of both irritant and allergic contact dermatitides and their characteristics. The remainder of this program will look at contact dermatitis caused by the *Toxicodendron* genus of plants, which includes poison ivy and its relatives.

**Goal** – To educate pharmacists about contact dermatitis, particularly that which is caused by plants, and its treatment.

### Learning objectives:

After reading this program, the pharmacist will be able to:

1. Explain the characteristics of contact dermatitis, particularly those caused by members of the *Toxicodendron* genus of plants, which includes poison ivy.
2. Identify the constituents that trigger an allergic skin reaction to the *Toxicodendrons*, particularly urushiol.
3. Describe the mechanisms of contact dermatitis, especially the sensitization phase and the elicitation phase.
4. List the symptoms of *Toxicodendron*-related contact dermatitis.
5. Counsel patients on treatments for *Toxicodendron*-related contact dermatitis and make referrals to the physician if necessary.

## POISON IVY – IT GETS UNDER YOUR SKIN

Most people have heard of poison ivy, poison sumac, and poison oak, but not all can recognize it among the jumble of other weeds and wildflowers that grow in the fields and woods of the United States and Canada. However, if there is only one plant genus that health care providers should be able to identify in nature and know how to describe to patients, the *Toxicodendron* genus (formerly *Rhus*) is the one. Images of the 3 major *Toxico-*

*dendron* species are presented in Figure 1.

Poison ivy is abundant throughout most of North America and grows as either a shrub or a vine<sup>1</sup>. It is identified by its characteristic clusters of 3 lobe-shaped leaflets arranged on stalks (“leaves of 3, let it be” as the old saying goes) and by its white berries that appear in autumn. Western poison oak grows along the Pacific Coast from Canada to Mexico. It typically grows as an unsupported bush, and the center leaf of the 3-leaflet cluster resembles an oak leaf, hence its moniker. Eastern poison oak spreads out from New Jersey to Florida and from Texas to Kansas. Poison sumac is a coarse, woody shrub or small tree commonly found in swamps of the southern and eastern United States, and has 7 to 13 leaflets arranged on each side of the leaf stalk. A more detailed description is presented in Table 2.

### ALLERGIC CONSTITUENTS – WHAT MAKES IT ITCH SO MUCH?

The offending ‘sap’ contained in resin canals of *Toxicodendrons* and related species is an oleoresin, a compound of an essential oil and resin, present in certain plants<sup>1</sup>. A resin is any one of a class of yellowish brown solid inflammable substances, of vegetable origin, which are nonconductors of electricity and are soluble in ether, alcohol, and essential oils, but not in water. Urushiol refers to the component of the oleoresin that contains the allergenic and irritant chemicals that also form a lacquer when painted onto wood. In fact, urushiol derives its name from the Japanese word ‘urushi’ referring to lacquer<sup>2</sup>, and purportedly serves as a defense system against herbivorous insects and vertebrates<sup>3</sup>.

Urushiol is not one chemical, but it is a mixture of chemicals. Urushiol is not the entire sap that exudes from *Toxicoden-*

*dron* resin canals, but it is a fraction of that sap.

As little as 1 microgram of urushiol can cause dermatitis in hypersensitive individuals. Direct contact with the plant is not necessary, as urushiol clings to pets, tools, shoes, and clothing for months. Washing clothes with regular laundry detergent will decontaminate fabrics. Touching the plant is not enough to elicit an allergic response, since the plant must be bruised first, thereby allowing the sap to escape. Thus, the highest incidence of dermatitis is in the spring when the leaves are young, soft and easily bruised. In autumn, yellowed leaves still have allergenic properties, but are more resistant to bruising.

### EPIDEMIOLOGY

The *Toxicodendron* genus of plants probably causes more cases of allergic contact dermatitis (ACD) than all other causes combined<sup>1</sup>. Ten to 50 million Ameri-

**TABLE 1**  
**Characteristics and examples of contact dermatitides**

Characteristics	Primary dermatitis	Secondary dermatitis	Allergic contact dermatitis
Mechanism	Direct insult to tissue; no preceding dryness or fissuring	Abrasion, desiccation, trauma, dryness, soreness, and fissures precede eruption	Immunologic; initial contact sensitizes*; subsequent contact elicits a response; no preceding eruption
Onset	Sudden; response in 30 minutes to several days after exposure	Slow; over days, months, or years	Sudden; response in 24-48 hours after exposure
Symptoms	Erythema, vesicles, exudation, possible necrosis	Hyperkeratosis, erythema, vesicles and fissures	Erythema, vesicles, edema and necrosis**
Usual location	Hands	Hands	Hands, face, extremities
Causes	Strong acids or bases	Soaps, cosmetics, topical medications, detergents	Catechols of poison ivy, poison oak; nickel, topical antibiotics and antihistamines, “caine” types of local anesthetics

Source: Beers MH, Berkow R, eds. Dermatitis In *The Merck Manual*, ed. 17. Whitehouse Station, NJ: Merck Research Laboratories, 1999: 786-793.

\*Sometimes the initial contact can lead to a clinical response.

\*\*Applies to acute reactions. After several days to a week, dry, scaly papules and plaques will develop.

**FIGURE 1**



**Poison Ivy**



**Poison Oak**



**Poison Sumac**

cans develop ACD to a *Toxicodendron* annually<sup>4</sup>. Up to 73% of individuals react to undiluted *Toxicodendron* oleoresin during patch testing<sup>5</sup>, while 50% to 65% react to brushing up against plants in their natural habitat<sup>6</sup>.

Workers in certain occupations are at highest risk for developing urushiol-related ACD. Forestry workers, particularly in the Pacific Northwest where western poison oak is abundant, are frequently exposed to poison oak while performing their regular tasks<sup>7</sup>. Throughout the United States, *Toxicodendron* dermatitis accounts for more than 10% of all USDA Forestry Service lost-time injuries<sup>8</sup>. This problem is most severe in California, Oregon, and Washington for poison oak and in Illinois, Kentucky, West Virginia, and Mississippi for poison ivy. In California, 1% of the Worker's Compensation state budget goes for poison oak reactions. Even more importantly, as many as 1/3 of forestry workers and firefighters are completely disabled by poison oak exposure when they are working to control forest fires in California, leading to severe personnel shortages.<sup>8,9</sup>

In one study, 10% of all occupational illnesses and injuries among seasonal farm workers in

New York and Pennsylvania were due to poison ivy contact<sup>10</sup>. Construction and utility maintenance workers, park rangers, groundskeepers, and lawn care workers are also at high risk for contact with *Toxicodendrons*<sup>11</sup>.

#### **MECHANISM OF ALLERGIC CONTACT DERMATITIS**

ACD has 2 distinct phases: a sensitization phase, during which a specific hypersensitivity to the allergen is acquired, and an elicitation phase, during which the dermatological response is visible. The pathway through these phases is as follows:

Urushiol components are oxidized to the *o*-quinone derivatives, which react readily with human epidermal proteins to form complete antigens<sup>11</sup>.

The antigens leave the skin via the lymphatic system.

The antigens are then carried to the reticuloendothelial system (a widely distributed system consisting of all the cells able to ingest bacterial and colloidal particles), where, in response to the antigenic stimulus, special globulins and antibodies are synthesized and lymphocytes are sensitized.

The elicitation phase is entered only after repeated contact with the allergen, this time causing a

noticeable skin reaction.

The reaction appears to be triggered by the association of these immunologic elements carried by the blood to the skin.

The time between contact with the urushiol and the appearance of the rash varies with the amount of allergen contacted and the degree of sensitivity – usually 2 to 3 days, but rarely less than 12 hours. However, in very sensitive individuals, reactions within 4 hours have been reported.<sup>19</sup> Lesions vary from simple macules to vesicles and bullae (large blisters filled with clear fluid). The fluid in the lesions is not antigenic, as many believe. However, bursting of these lesions can lead to secondary infection, particularly if they are broken in the course of scratching because fingernails can harbor pathogens that can be transferred to the affected skin.

#### **SYMPTOMS – MAKING SOME RASH DECISIONS**

Urushiol-related ACD usually appears on the hands, legs, and face, but can occur anywhere on the body, depending on where the urushiol is spread. Different parts of the body can have different sensitivities [Figures 2, 3, 4]. Often, parts of the body that are in contact with a heavy con-

Photos: (left) © 2004 PunchStock; (middle) © Ralph A. Clevenger/CORBIS; (right) John M. Burnley/PhotoResearchers, Inc.

**TABLE 2**

## Identifying members of the *Toxicodendron* genus of plants

### Poison Ivy

- Woody, ropelike vine, a trailing shrub on the ground, or a free-standing shrub
- Normally 3 leaflets (groups of leaves all on the same small stem coming off the larger main stem), uncommonly 5 and rarely 7 leaflets are seen
- Leaves are green in the summer and red in the fall
- Berries are green in the spring and white in the summer and fall until they fall off

### Poison Oak

- Eastern (from New Jersey to Texas) grows as a low shrub; western (along the Pacific coast) grows to 6-foot-tall clumps or vines up to 30 feet long
- Oak-like leaves, usually in clusters of three
- Clusters of yellow berries

### Poison Sumac

- Grows in boggy areas, especially in the Southeast
- Rangy shrub up to 15 feet tall
- 7 to 13 smooth-edged leaflets
- Glossy pale yellow or cream-colored berries

Source: Fisher, 1996a

**FIGURE 2**



**Classic poison ivy as displayed on ankle and shin. Rash has developed puss.**

Photo: Scott Camazine/Photo Researchers, Inc

centration of the antigen present with more severe reactions and remains hypersensitive for years.

The initial reaction is the rash with the gradual development of raised lesions. The emerging lesions are usually marked by mild to intensive burning and itching. The affected area then oozes, eventually dries, and then crusts. Most cases are self-limiting and disappear in 14 to 21 days.

Urushiol-related ACD is diagnosed not only by the morphologic appearance of the lesions, but also from their distribution – linear streaking is common as a result of brushing against a plant. A patient's history of exposure to the *Toxicodendrons* facilitates the diagnosis.

## TREATMENT – AN OCEAN OF CALAMINE LOTION?

Since urushiol-induced contact dermatitis is difficult to treat, the best way is to prevent the dermatitis. Here, plant recognition is key<sup>12</sup>. Adults and children alike should learn how to recognize members of the *Toxicodendron* genus and to avoid them, even in the winter when the plants appear dead or dormant.

## TOPICAL PREVENTION

### Clothing

Protective clothing is the primary method of preventing dermatitis if contact with *Toxicodendrons* is unavoidable<sup>12</sup>. Vinyl (polyvinyl chloride) gloves are protective, but latex and rubber gloves allow penetration of the antigen<sup>11</sup>.

### Barrier Creams

Because so many outdoor workers (soldiers, loggers, farmers, fire fighters, construction workers, and utility maintenance workers) are at risk for contact with the *Toxicodendron* genus, many attempts have been made to develop effective barrier creams, leading to the testing of over 150 different preparations<sup>11</sup>.

In 1995, encouraging results were published that assessed an organoclay barrier compound, 5% quaternium-18 bentonite lotion or bentoquatam (IvyBlock™, Enviro-derm Pharmaceuticals, Plymouth, Massachusetts). Bentoquatam is the only barrier cream FDA-approved for the prevention of *Toxicodendron* dermatitis. The published study was conducted to evaluate the effectiveness and safety of the bentoquatam lotion in preventing experimentally induced poison ivy and poison oak contact dermatitis in 211 susceptible volunteers. The lotion was applied to

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one forearm an hour before both forearms were patch-tested with urushiol<sup>13</sup>. The test patches were removed after 4 hours and the sites interpreted for reaction 2, 5, and 8 days later. The test sites pretreated with bentoquatam lotion had no or significantly reduced reactions to the urushiol compared with untreated control sites ( $p < .0001$ ) on all test days. When a reaction did occur, it consistently appeared later on the treated versus the control sites ( $p < .0001$ ). The investigators concluded that bentoquatam lotion was effective in preventing or diminishing experimentally produced poison ivy and poison oak contact dermatitis.

## TREATMENT

### **Immediate post-exposure**

#### **Soap and water**

Immediately after suspecting contact with a *Toxicodendron*, individuals should wash with water (and soap, if available)<sup>11</sup>. Studies show that the sooner the exposed areas are washed, the lesser the reactions<sup>12</sup>. The potentially contaminated hand that can spread antigen must be washed first. While urushiol is not water soluble, it probably physically forces the urushiol off the skin. Additionally, high concentrations of water seem to inactivate urushiol, so use copious amounts of warm, not hot, water. Strong soap, hot water, and scrubbing merely irritate the skin and are not more effective than mild soap, warm water, and gentle washing<sup>11</sup>. The area beneath the fingernails need to be thoroughly scrubbed, however, as urushiol can remain under them for long periods and remain allergenic.

#### **Decontamination**

New outbreaks of *Toxicoden-*

*dron* dermatitis from contaminated articles must be prevented. As mentioned, clothes will be rendered harmless after one cycle of washing with an ordinary detergent. Other articles, such as shoes, tools, sports equipment, should at least be rinsed with copious amounts of water. Pets suspected of harboring urushiol should be bathed.

## TOPICAL TREATMENT OF CONTACT DERMATITIS

The goal of topical therapy is to decrease pruritus, redness, and heat<sup>14</sup>. In the acute stages of the dermatitis, the eruption is moist and weepy. Wet-to-dry dressings ameliorate pruritus, erythema, and even vesicles<sup>6</sup>. Aluminum subacetate (Burrow's solution, Domeboro™) comes as a 5% solution that must be diluted to 1:40 concentration, and it is available as a powder or tablets that can be dissolved in water. Patients should apply cotton-soaked wet dressings 3 to 4 times daily for 15 to 30 minutes each application to dry out the weeping, bullous lesions. Aseptic drainage of bullae reduces itching, but is usually reserved for severe itching to avoid incidences of secondary infection.

Patients can first bathe in warm water with colloidal oatmeal or cornstarch for their soothing, antipruritic properties. To prevent ground oatmeal from caking in pipes, place it in a tied sock before dropping it in the bathtub. Application of bland shake lotions such as calamine can also dry moist skin lesions. However, Caladryl™, which includes diphenhydramine will likely not offer any additional benefits since histamine has never been proven to be a mediator in the pruritus associated with any dermatitis.

A recently introduced product has been demonstrated to reduce both itching and objective signs of dermatitis. Zanafel™ (Zanafel Laboratories, Morton, Illinois), available without a prescription, is a soap mixture of ethoxylate and sodium lauroyl sarcosinate surfactants. It has been demonstrated that this soap forms a complex that surrounds components of urushiol and removes them from the skin [Zanafel laboratories, Data on file]. A randomized, double-blinded, bilateral-controlled study of 24 urushiol-sensitive adults demonstrated that an objective score combining erythema, induration, and vesiculation was reduced ( $p < .05$ ) at times 48, 96, and 144 hours post-exposure to urushiol in patients who washed with the soap compared to placebo<sup>15</sup>.

In another study, urushiol was placed on the arms of 16 *Toxicodendron*-sensitive adults [Zanafel Laboratories, Data on file]. The patients returned at Day 4 for evaluation of pruritus and for objective signs of dermatitis. Before application of the soap on Day 4, the average itch score was 6.7 out of 10 and the dermatitis score was 2.5 out of 5 (moderate-to-marked erythema, mild edema, initial vesicle formation). Immediately after washing for 2 to 3 minutes with the soap, the average itch score had dropped to 4.3 out of 10 ( $p < .001$ ) and dermatitis score was statistically unchanged at 2.3 out of 5. Two hours later, the itch score had dropped to 2 out of 10 ( $p < .001$ ) and the dermatitis score had dropped to 1.7 out of 5 (mild-to-moderate erythema with no or minimal edema) ( $p = .001$ ).

While late application of even the superpotent Class I topical steroids (eg, betamethasone dipropionate, clobetasol propi-

onate) does little to help urushiol-induced dermatitis, early application, particularly under occlusion, can alter the natural course of disease and significantly reduce the bothersome pruritus<sup>16</sup>. To be effective, one of these steroids needs to be applied before the presentation of vesicles and bullae. It must be continued for 2 to 3 weeks, or the dermatitis will rebound. Using ointments (no water in the base, and therefore, no preservatives) reduces the likelihood of sensitization to another allergen<sup>12</sup>. For subacute, scaly red dermatitic lesions, high-potency (Class II-IV) corticosteroid creams will be useful, and for chronic lichenified dermatitis, ointments or flurandrenolide tape will help the active ingredient to penetrate the lesion.

The new topical calcineurin inhibitor pimecrolimus (Elidel™, Novartis) was tested in a double-blind, placebo-controlled study in 12 subjects exposed to poison ivy tincture<sup>17</sup>. While quite effective in atopic dermatitis, it was shown to be ineffective for urushiol-induced contact dermatitis.

### **Topical agents to avoid**

A number of other topical products have been recommended for use in *Toxicodendron* dermatitis. For example, jewelweed (*Impatiens biflora*) has been used for centuries to treat poison ivy and oak ACD. Numerous claims for its effectiveness have appeared in the lay press, and it is used as an ingredient in OTC medications. In one study, 10 volunteers were exposed to urushiol on 2 sites<sup>18</sup>. One site was treated with jewelweed extract from fresh stems, and the other site was exposed to distilled water. Patients were examined on Days 2, 3, 7, and 9. All subjects

**FIGURE 3**



**Contact dermatitis with vesicle formation on the abdomen of a child**

developed an allergic reaction, and there was no difference in objective dermatitis scores between jewelweed-treated and control sites.

The use of topical antihistamines, topical anesthetics with benzocaine (an ester anesthetic), and antibiotics with neomycin or bacitracin should be avoided because of their potential to stimulate their own allergic contact dermatitis when absorbed through large breaks in the epidermal barrier<sup>6,14</sup>. Topical amide anesthetics, such as lidocaine, should be safe, as they have a low potential to sensitize. Topical antihistamines do not work to reduce itching. OTC hydrocortisone 1% is far too weak to have any helpful effect, regardless of the frequency of application<sup>6</sup>.

### **SYSTEMIC TREATMENT OF DERMATITIS**

Systemic steroids are the standard treatment for severe *Toxicodendron* dermatitis. The typical dose of oral prednisone is 0.5-2 mg/kg/day (usually 1 mg/kg/day) tapered over a 14 to 21 day period<sup>12</sup>. Based on the results of

one study, 3 weeks is a reasonable duration, although this aspect of treatment is debated<sup>19</sup>. If steroids are stopped earlier than 14 days after onset of dermatitis, the eruption will usually break through. Some of the acute side effects that can occur with oral prednisone or its equivalent include emotional lability, water retention, hyperactivity, and increased appetite. Rare side effects of corticosteroid use include exacerbation of gastric ulcers, diabetes, hypertension, and rarely, avascular necrosis of the hip. Corticosteroids decrease inflammation by reversing increased capillary permeability and by suppressing neutrophil activity. They reduce itching by inhibiting a delayed type hypersensitivity response.

When should the patient be referred to a physician to obtain a systemic corticosteroid? Typically, patients with widespread dermatitis (>25% body surface area), limited, but disabling involvement (hands, face, periocular, perioral, or genital lesions), or if a patient has a history of severe reactions in the past<sup>20</sup>.

Reasons to avoid systemic steroids may include hypersensitivity, viral infection, peptic ulcer disease, hepatic dysfunction, connective tissue infections, fungal or tubercular skin infection, and diabetes. One option for patients with diabetes or peptic ulcer disease is cyclosporine. While its use in *Toxicodendron* dermatitis has not been reported in peer-reviewed medical publications, its use has been reported by individual dermatologists (<http://dermatology.cdlib.org/rx-derm-archives/cyclosporin-for-contact-derm>). Adult dosing of cyclosporine is suggested at 200 mg twice daily for 10 days and

100 mg twice daily for 10 more days resulting in clear skin within 2 to 4 days. Cyclosporine is much more expensive than prednisone.

### SYSTEMIC TREATMENTS TO AVOID

Oral ibuprofen (400 mg orally 3 times daily) did not affect patch test reactivity or pruritus to urushiol extract<sup>21</sup>. Also, there is scant evidence to confirm that either sedating or nonsedating antihistamines are effective in the treatment of urushiol-induced contact dermatitis. A study from 1958 showed that diphenhydramine (Benadryl™) 100 mg daily, triproleamine 200 mg daily, and chlorpheniramine (Chlor-Trimeton™) 16 mg daily had no effect on *Toxicodendron* dermatitis<sup>22</sup>. For sedating antihistamines, it can be difficult to distinguish antipruritic or other clinical effects from the sedative or soporific effect<sup>6</sup>. Reported improvements in disease severity and quality of life may be due primarily to promotion of restful sleep rather than a reduction in symptoms.

Antihistamines have been more widely used in another form of dermatitis, atopic dermatitis. Atopic dermatitis is also considered a delayed type hypersensitivity reaction. Even with atopic dermatitis, there is a paucity of proper clinical trials and no evidence to support the efficacy of non-sedating antihistamines.

While systemic steroids are extremely effective when indicated, patients routinely are forced to seek further treatment for *Toxicodendron* dermatitis after receiving a dosepack of methylprednisolone. This 6-day treatment regimen contains the equivalent of 30-25-20-15-10-5

FIGURE 4



**Acute reaction to poison ivy. Note edema to the eye and surrounding tissue**

mg of prednisone on each of the 6 days. This is a lower and shorter dose than will effectively treat *Toxicodendron* reactions<sup>6</sup>. As aforementioned, the

dermatitis recurs because it requires at least 3 weeks to run its course<sup>19</sup>, and stopping the steroids too soon merely allows the natural disease to “come out of hiding.”

### COUNSELING THE PATIENT WITH TOXICODENDRON-RELATED CONTACT DERMATITIS.

The patient who presents to the pharmacist with a possible *Toxicodendron*-related rash should be counseled with regards to the symptoms before selecting a topical OTC remedy.

Instruct the patient to see his or her physician if the following conditions are experienced:

- Large areas of rash causing significant discomfort
- Rash on mouth, genitals, or around the eyes
- An area of the rash that becomes infected or drains pus
- A great deal of swelling

For smaller areas of dermatitis on the extremities, an OTC product, such as colloidal oatmeal, can

TABLE 4

### For more information on contact dermatitis, use these resources:

#### Organizations

American Academy of Dermatology – [www.aad.org](http://www.aad.org)  
American Contact Dermatitis Society - [www.contactderm.org/](http://www.contactderm.org/)  
Botanical Dermatology Database - [bdd.cf.ac.uk](http://bdd.cf.ac.uk)  
The Cosmetic, Toiletry, and Fragrance Association Homepage - [www.ctfa.org/](http://www.ctfa.org/)  
Household Products Database - [householdproducts.nlm.nih.gov](http://householdproducts.nlm.nih.gov)  
National Institute for Occupational Safety and Health (NIOSH) - [www.cdc.gov/niosh/homepage.html](http://www.cdc.gov/niosh/homepage.html)  
Occupational Safety and Health Administration (OSHA) – [www.osha.gov](http://www.osha.gov)

#### Journals

American Journal of Contact Dermatitis -[www2.us.elsevierhealth.com](http://www2.us.elsevierhealth.com)  
The Chronicle of Skin & Allergy - [skin.chronicle.ca](http://skin.chronicle.ca)  
Contact Dermatitis - [www.blackwell-synergy.com](http://www.blackwell-synergy.com)  
Skin and Allergy News - [www.eskinandallergynews.com](http://www.eskinandallergynews.com)

Photo: Custom Medical Stock Photo

**TABLE 3**

**Debunking the myths of urushiol-induced contact dermatitis**

**Myths**

**Facts**

Only the leaves of poison ivy/oak/sumac can cause the rash.

Nearly all parts of the plant, including stems, roots, flowers, berries, and leaves contain urushiol [Myths, 1998].

Wearing long sleeves, gloves, and pants will always prevent a reaction to poison ivy.

While wearing these articles decreases the likelihood of a reaction, sap can seep through clothes and even latex and rubber gloves, but not through heavy-duty vinyl gloves [Myths, 1998; Fisher, 1996].

Burning is a safe way to dispose of poison ivy vegetation.

While smoke is harmless, urushiol is stable at high temperatures, and plant particles dispersed in the smoke are allergenic and irritant [Myths, 1998].

Dead poison ivy/oak/sumac plants are no longer toxic.

Urushiol remains active for at least 5 years in the dead plants [Fisher, 1996b].

Rubbing weeds on the skin can help the rash.

No weed, including jewelweed, a folklore treatment, has been shown to help the eruption. However, jewelweed may ease the pruritus [Long, 1997].

Antihistamines help the rash and itching of *Toxicodendron* dermatitis.

No study has ever demonstrated that the rash or itching of *Toxicodendron* dermatitis is affected by antihistamines. Histamine has not been demonstrated to be an important mediator of pruritus in any form of dermatitis. However, antihistamines, such as diphenhydramine, can make patients sleepy and care somewhat less about their pruritus.

The blister fluid of poison ivy reactions can spread dermatitis from one part of the body to another and from one person to another.

The blister fluid does not contain urushiol and cannot propagate the reaction. Patch tests with the fluids cause no reaction [Fisher, 1996a].

The rash of poison ivy spreads from one part of the body to another.

The rash can only spread to another part of the body if you touch one area of your body with another part that still has plant sap on it. The rash appears to be spreading because different areas of the body have different thicknesses of stratum corneum leading to different rates of absorption of antigen, different amounts of ultraviolet exposure (that can reduce Langerhans cell activity), and different amounts of antigen present [Guin, 2000]. Therefore, some areas of the body may respond up to 2 weeks later than other parts of the body [Myths, 1998; Poison, 1999].

Once allergic, always allergic.

Allergic responsiveness to poison ivy wanes with age. Many individuals, particularly those with a mild reaction to poison ivy, may lose their responsiveness as they grow older and if they stay away from poison ivy contact for a year.

be selected to help diminish the itching. The rash and itching usually go away in 2 to 3 weeks but encourage the patient not to scratch. If the patient is a child, cut his or her fingernails short to discourage scratching. Soak the rash area in cold water or massage it with an ice cube for 20 minutes as often as necessary. Let it air dry after the soaking or massage. This will reduce itching and oozing. If the patient is prescribed a corticosteroid, treatment should be continued for at least 3 weeks because the rash can come back if medicines are stopped too soon. The patient may have temporary darkening of the skin when the rash disappears. Surrounding redness, pain, and pus can indicate a skin infection, which the physician can treat with antibiotics.

### GENERAL PATIENT INFORMATION

- Avoid the plants. Learn what they look like in your area. Be aware that their appearance can vary with the seasons.
- Do not burn the plants.
- Wear proper clothing to protect your skin, such as gloves, long sleeves, and long pants.
- Bathe pets that may have the oil on their fur. Use soapy water. Do not forget to wear protective clothing while doing this.
- Wash any clothing that might contain the plant oil that causes the rash. Unwashed clothes can retain the oil and cause a rash in anyone who wears or handles them.
- Before you go out in a potentially infested area, you can apply over-the-counter products such as Ivy-

Block™, which act as a barrier to the oils.

- If you suspect that you have encountered a *Toxicodendron* on exposed skin, wash the affected area immediately with soap and water.
- Remember that the oil can be transferred from people, pets, or objects. Thoroughly wash anything that may carry the oil.
- If despite taking all the precautionary measures outlined above you begin to experience minor symptoms, indicating that urushiol binding has occurred, then you can apply Zanfel™, which can inactivate the urushiol and minimize or even prevent additional symptoms.

The myths and inaccuracies about *Toxicodendron*-related dermatitides can be dispelled using the information in Table 3.■

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# The characteristics and treatment of contact dermatitis caused by **POISON IVY** and its relatives.

## Continuing education test questions

Write your answers on the answer form. Mark the most appropriate answer.  
Photocopies of the answer form are also acceptable.

- Which could cause an irritant contact dermatitis?
  - Poison ivy
  - Nickel
  - Strong acid
  - "Caine" anesthetic
- Which could cause an allergic contact dermatitis?
  - Soap
  - Cosmetics
  - Poison oak
  - Detergent
- Which member of the *Toxicodendron* genus does not have "leaves of 3"?
  - Poison ivy
  - Poison oak
  - Poison sumac
  - None of the above
- What is not true about urushiol?
  - As little as 1 milligram of urushiol can cause dermatitis in hypersensitive individuals.
  - Urushiol is not one chemical, but it is a mixture of chemicals.
  - Urushiol is not the entire sap that exudes from *Toxicodendron* resin canals, but it is a fraction of that sap.
  - Direct contact with the plant is not necessary to experience a urushiol-related dermatitis.
- What is true about the lesions associated with urushiol-induced dermatitis?
  - They can emerge in several hours after contact with urushiol.
  - Secondary infections can develop from scratching the lesions so that they break.
  - The fluid in the lesions is antigenic.
  - All of the above
- The best way to avoid a urushiol-induced rash is to:
  - Burn the plants
  - Avoid the woods
  - Recognize the plants
  - Avoid people with the rash
- Which is not an adequate protectant against urushiol?
  - Vinyl gloves
  - Bentoquatam lotion
  - Long pants
  - Rubber gloves
- Following immediate contact with a *Toxicodendron* plant, which is the best course of action?
  - Wash with strong soap and very hot water
  - Wash with copious amounts of warm water
  - Heavily scrub the site of exposure
  - Apply a topical antibiotic
- The goal of topical therapy in treating a urushiol-induced contact dermatitis is to decrease:
  - Itching
  - Redness
  - Heat or burning sensation
  - All of the above
- Which topical product has never been proven to decrease the pruritus associated with contact dermatitis?
  - Calamine lotion
  - Cornstarch
  - Caladryl™
  - Colloidal oatmeal

11. The mechanism of action associated with Zanafel™ is closely related to that of a:
- Soap
  - Antihistamine
  - Steroid
  - Barrier cream
12. If a topical steroid is to be used on the rash site, which is the best recommendation to give a patient?
- Apply it before the appearance of vesicles
  - Use for no more than 1 week
  - An ointment is preferable to a cream because of its lack of preservatives.
  - A and C
13. Which would be a better topical remedy than hydrocortisone in controlling the itching associated with urushiol-related rash?
- Pimecrolimus
  - Jewelweed
  - Clobetasol propionate
  - Topical antihistamine
14. What is the typical dose of an oral systemic steroid needed to treat severe *Toxicodendron* dermatitis?
- Prednisone 0.5-2 mg/kg/day tapered over 14 to 21 days
  - Prednisone 1 mg/kg/day for 7 days
  - Methylprednisolone taper over 6 days
  - All of the above
15. An alternative to systemic steroids in a diabetic patient with urushiol-induced rash is:
- Oral ibuprofen 400 mg 3 times a day
  - Cyclosporine 200 mg twice daily
  - Chlorpheniramine 16 mg daily
  - Any OTC topical antihistamine
16. Which of the following statements about urushiol-induced contact dermatitis is true?
- Only the leaves of poison ivy/oak/sumac can cause the rash.
  - Burning is a safe way to dispose of poison ivy vegetation.
  - Antihistamines help the rash and itching of *Toxicodendron* dermatitis.
  - Urushiol remains active for at least 5 years in dead *Toxicodendron* plants.
17. Which of the following statements about urushiol-induced contact dermatitis is false?
- When burned, urushiol is stable at high temperatures, and plant particles dispersed in the smoke are allergenic and irritant.
  - Wearing long sleeves, gloves, and pants will always prevent a reaction to poison ivy.
  - No weed, including jewel weed, a folklore treatment, has been shown to help the eruption.
  - Allergic responsiveness to poison ivy wanes with age.
18. Urushiol-related ACD is diagnosed not only by the morphologic appearance of the lesions, but also from:
- A bulls-eye pattern of rash
  - An amorphous rash with raised edges
  - A pattern of linear streaking
  - All of the above
19. Which product can remove urushiol once it is exposed to the skin?
- Zanafel™
  - IvyBlock™
  - Caladryl™
  - Elidryl™
20. Which topical product is likely safe to use when treating urushiol-related contact dermatitis?
- An ester anesthetic
  - An antihistamine
  - An antibiotic containing neomycin
  - An amide anesthetic

# The characteristics and treatment of contact dermatitis caused by **POISON IVY** and its relatives.

## Answer sheet and evaluation

### Continuing Education Accreditation

This continuing education program was made possible by an unrestricted educational grant from Zanafel Laboratories, Inc.



The University of Florida College of Pharmacy has been accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmaceutical education. This activity has been approved for 2 hours (0.2 CEU) of continuing pharmacy education credit; UPN 012-999-04-341-H01. To receive credit you must achieve a score of 70% on the quiz and complete the evaluation. The University of Florida College of Pharmacy will mail statements of Credit within 4 weeks after receipt of a successful quiz.

### Answer Form

January 2005 UPN 012-999-04-341-H01 Test questions start on page 12.

### The Characteristics and Treatment of Contact Dermatitis and it's Relatives

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| 1. <input type="radio"/> a. <input type="radio"/> b. <input type="radio"/> c. <input type="radio"/> d. | 6. <input type="radio"/> a. <input type="radio"/> b. <input type="radio"/> c. <input type="radio"/> d.  | 11. <input type="radio"/> a. <input type="radio"/> b. <input type="radio"/> c. <input type="radio"/> d. | 16. <input type="radio"/> a. <input type="radio"/> b. <input type="radio"/> c. <input type="radio"/> d. |
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### Program Evaluation

Please circle the number that reflects your opinion of the following statements, using the rating scale below, and return with your answer form. 1 = Strongly agree 2 = Agree 3 = Disagree 4 = Strongly disagree

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