



■ Case Report

Phytophotodermatitis due to a Citrus-Based Hand Sanitizer: A Case Report

Kevin P. Lee^{1,*}, Raghavendra L. Girijala², Susan Y. Chon^{2,3}

¹McGovern Medical School, University of Texas Health Science Center at Houston, Houston, TX, USA

²Department of Dermatology, University of Texas Health Science Center at Houston, Houston, TX, USA

³Department of Dermatology, MD Anderson Cancer Center, Houston, TX, USA

Phytophotodermatitis, a cutaneous reaction caused by direct contact with photosensitive substances in plants and subsequent exposure to ultraviolet light, is commonly caused by psoralens in plants, including citrus fruits. We describe a case of phytophotodermatitis caused by a hand sanitizer containing a blood orange (*Citrus sinensis*) extract. To our knowledge, this is the first reported case of phytophotodermatitis caused by a hand sanitizer. A 41-year-old woman presented with a 2-week history of pruritic cutaneous eruptions on her right thigh. Approximately 24 hours prior to the onset of her symptoms, she applied a new citrus-based hand sanitizer. Immediately after applying the hand sanitizer, her right thigh was exposed to sunlight for approximately 5 hours. Extracts from oranges are used in many cosmetics, including perfumes and fragrances. With the increased use of hand sanitizers during the coronavirus disease 2019 pandemic, physicians should note that phytophotodermatitis due to scented hand sanitizers may occur more frequently.

Keywords: Phytophotodermatitis; Hand Sanitizers; Citrus; Blood Orange; Case Report

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*Corresponding Author: Kevin P. Lee <https://orcid.org/0000-0002-2093-3460>

Tel: +1-71-3500-8260, Fax: +1-71-3524-3432, E-mail: Kevin.P.Lee@uth.tmc.edu

INTRODUCTION

Phytophotodermatitis is a cutaneous reaction caused by direct contact with photosensitive substances in plants and subsequent exposure to ultraviolet (UV) light.¹⁾ Furocoumarins, specifically psoralens, are the most common phototoxic compounds found in plants.¹⁾ Furocoumarins are found in several species of edible plants including the *Umbelliferae* and *Rutaceae* families. *Umbelliferae* plants include carrots, celery, parsnips, and parsley, while *Rutaceae* plants primarily include citrus fruits, such as limes, lemons, oranges, and grapefruits.²⁾ Celery is considered the most common causative plant of phytophotodermatitis followed by citrus fruits.³⁾ Phytophotodermatitis due to limes and lemons are commonly seen on the hands, arms, and perioral regions from consumption of these fruits or contact with their juices.²⁾ We describe a case of phytophotodermatitis on a patient's right thigh following application of a citrus hand sanitizer containing blood orange (*Citrus sinensis*) extract. To the best of our knowledge, this is the first case of phytophotodermatitis caused by a hand sanitizer.

CASE REPORT

A 41-year-old woman presented with a 2-week history of pruritic cutaneous eruption on the anterior surface of her right thigh. The patient admitted to using a new citrus-based hand sanitizer 2 weeks prior to the office visit. The ingredients in the sanitizer included extracts from blood orange, rosemary, lavender, safflower, yeast, and aloe, along with ethyl alcohol, deionized water, glycerin, propylene glycol, panthenol, tocopheryl acetate, carbomer, and aminomethyl propanol. She reported using her hands primarily, which was routinely followed by frequent hand washing.

Prior to the onset of her rash, she admitted to driving for several



Figure 1. Erythematous patch with linear streaks on the anterolateral surface of the right thigh. Written informed consent for publication of this image was obtained from the patient.

hours, during which time she applied the hand sanitizer and rubbed any excess sanitizer on her right thigh. At the conclusion of her drive, she had washed her hands but not her thighs. She noted that during her drive, she wore shorts and her right thigh was exposed to sunlight for about 5 hours.

Approximately 24 hours after application, the patient developed erythematous, edematous, pruritic plaques with a linear configuration on her right anterior thigh, corresponding to the areas that came in contact with the hand sanitizer (Figure 1). The patient denied exposure to any other compounds. She denied any history of contact dermatitis or other similar reactions. Her medication included lorazepam and sertraline. On physical examination, the patient presented with thin pink-brown plaques with linear streaks on the anterior surface of her right thigh. The patient was prescribed triamcinolone 0.1% ointment twice a day and was counseled to stop using a hand sanitizer. One week later, she reported that her rash had improved, despite leaving behind a hyperpigmented patch.

The patient provided written informed consent for publication of the research details and clinical images.

DISCUSSION

Furocoumarin phototoxicity has been reported to be related to UV-A light, which corresponds to wavelengths between 320 nm and 400 nm.³⁾ Classically, phytophotodermatitis initially presents with erythema and edema after the first 24 hours, and is sometimes followed by blistering over the next few days.⁴⁾ The eruption can often result in post-inflammatory hyperpigmentation, which can take weeks to months to resolve.⁴⁾ Usually, patients may not recall the inflammation and present only with hyperpigmentation.³⁾ Treatment primarily involves the use of a topical steroid as well as the removal and avoidance of the offending agent in the context of sun exposure.⁵⁾

Phytophotodermatitis is a clinical diagnosis but can appear similar to many other common cutaneous reactions, including contact dermatitis, burns, or skin infections; therefore, it can be challenging to diagnose.⁶⁾ Photo-patch testing is one of the methods that can be used to confirm a diagnosis of phytophotodermatitis. Notably, our patient was not photo-patch-tested. However, given the patient's timing and history, we believe that the cutaneous eruption was most likely due to a reaction between the orange extract in the hand sanitizer and UV light.

Extracts from oranges are commonly used as scents in many cosmetics, including perfumes and fragrances. Several cases of phytophotodermatitis due to aromatherapy oils containing bergamot orange (*Citrus bergamia*) have been reported.⁷⁾ Our patient used a hand sanitizer containing extract from blood oranges, *Citrus sinensis*. Although not reported as often as bergamot orange, extracts from blood oranges are known to be phototoxic.²⁾

The use of hand sanitizers has grown exponentially in the past year due to the coronavirus disease 2019 pandemic. Sales of hand sanitizers increased by 470% in the first week of March 2020 alone.⁸⁾ With the widespread use of hand sanitizers, there has been an increase in the

number of adverse cutaneous reactions to hand sanitizer.⁹⁾ In our literature search, we found no previous reports of a case of photodermatitis secondary to a hand sanitizer. Physicians should be aware of the possible risk of phytophotodermatitis due to the use of scented hand sanitizers.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

ORCID

Kevin P. Lee: <https://orcid.org/0000-0002-2093-3460>

Raghavendra L. Girijala: <https://orcid.org/0000-0003-1394-3393>

Susan Y. Chon: <https://orcid.org/0000-0001-9457-0415>

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