

Case Report

Anacardium occidentale-induced cutaneous reaction: a rare presentation of irritant contact dermatitis

Ganesh Dhavalshankh¹, Gayatri Dhavalshankh², Sagar Goyal³,
Archana Dhavalshankh^{1*}, Sheetal⁴

¹Department of Dermatology, D. Y. Patil Medical College, Kolhapur, Maharashtra, India

²Department of Dermatology, Shri B. M. Patil Medical College and Hospital, Vijayapura, Karnataka, India

³D. Y. Patil Medical College, Kolhapur, Maharashtra, India

⁴Jawaharlal Nehru Medical College Sawangi (Meghe), Wardha, Maharashtra, India

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*Correspondence:

Dr. Archana Dhavalshankh,

E-mail: archana9595@yahoo.com

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ABSTRACT

Cashew apples, obtained from the *Anacardium occidentale* tree, are widely used in food preparation across tropical regions like India. While raw cashew apples are generally regarded as edible, it's important to be aware that they can carry some unanticipated skin risks. This is primarily due to the presence of irritants such as anacardic acid, cardol, and cardanol that can affect the skin. These substances, chemically related to urushiol (found in poison ivy), are known to trigger irritant contact dermatitis (ICD). We present a case of a 40-year-old housewife who developed sudden-onset skin inflammation after handling raw, wet cashew apples for the first time. Within 20 minutes, she experienced intense itching, redness, swelling, and blistering on her hands and forearms. The lesions progressed to bullae with serous discharge, typical of ICD. There was no prior history of allergies or dermatological conditions. The patient responded well to systemic corticosteroids (Omnocortil), antibiotics (Roxithromycin), antihistamines, and topical mupirocin. This case highlights the need for greater public and clinical awareness about the dermatotoxic potential of cashew apple exposure in non-industrial settings. Preventive measures, such as using gloves and minimizing skin contact, are crucial when handling cashew products. Clinicians should maintain a high index of suspicion for plant-based irritants in patients presenting with acute dermatitis and a clear exposure history.

Keywords: Anacardium Occidentale, Contact dermatitis, Adverse effect

INTRODUCTION

The cashew tree (*Anacardium occidentale*), a tropical evergreen species from the family *Anacardiaceae*, is cultivated extensively across tropical regions due to its high commercial value. Originally native to Brazil, it has been introduced to several countries across Africa, Southeast Asia, and India.¹ In India, cashew cultivation is especially prevalent in regions such as Goa, where favorable climatic conditions support steady production.^{2,3} Globally, cashew cultivation has become an important contributor to agricultural economies. By

2019, the market value of cashew nuts alone was estimated to be around USD 7.46 billion, highlighting its expanding international demand.^{2,3}

The life cycle of the cashew tree supports its role as a productive cash crop in tropical agriculture. The trees typically flower annually between January and March, relying primarily on insect-mediated (entomophilous) pollination.³ Apart from the well-known cashew nut, the tree also produces the cashew apple, a fleshy accessory fruit commonly used in local food preparations such as juices, jams, and fermented beverages. In farming

communities, especially in western coastal India, these apples are sometimes fed to livestock, either fresh or dried for later use.^{1,4} While these products contribute to both household and regional economies, awareness about the potential adverse effects of cashew handling remains limited outside specialized agricultural contexts.

One such adverse effect is contact dermatitis, a type of skin inflammation that occurs after contact with irritants or allergens.⁵ Contact dermatitis is generally classified into two types: ICD and allergic contact dermatitis (ACD). ICD occurs when chemical or physical agents directly harm the skin's outer barrier, triggering inflammation.⁵ In contrast, ACD involves an immune response mediated by T lymphocytes and requires prior sensitization to the offending substance.⁵

ICD accounts for the majority of contact dermatitis cases seen in clinical practice. It frequently develops through repeated exposure to substances such as soaps, detergents, solvents, industrial chemicals including phenols and aldehydes, and mechanical irritants like fiberglass, papers, or friction.^{1,5} Additional irritants such as rubber, coolants, resins, and certain petroleum products may also contribute.¹ Clinically, ICD often presents with redness, itching, swelling, blisters, and in prolonged cases, cracking and scaling of the skin.^{5,6} Studies indicate that women are slightly more likely to be affected by contact dermatitis than men, possibly due to greater exposure to irritants in household or occupational environments.⁶

Skin reactions due to exposure to cashew products, particularly cashew nut shell liquid (CNSL), have been well-documented in occupational settings, especially among workers in the nut processing industry.¹ CNSL contains phenolic compounds such as anacardic acid, cardol, and cardanol-substances known for their potent skin-irritating properties.¹ These chemicals are structurally similar to urushiol, the irritant responsible for reactions to poison ivy and poison oak.¹ However, while occupational exposure has been studied extensively, instances of irritant dermatitis caused by casual domestic handling of cashew apples are much less frequently reported, leading to a significant gap in public awareness.

As cashew-based products continue to gain popularity, and the handling of raw cashew apples remains common in many households, it is critical to raise awareness regarding these dermatological risks. Simple measures such as the use of gloves during preparation and limiting direct skin contact with cashew products can substantially reduce the risk of irritation and discomfort.

This report describes a rare presentation of acute irritant contact dermatitis resulting from brief domestic exposure to raw cashew apples. By presenting this case, we hope to promote awareness among healthcare professionals and the public regarding the dermatotoxic potential of commonly handled plant products like cashew apples.

CASE REPORT

In this study, we observed a case involving a 40-year-old housewife who developed an acute skin reaction following the handling of cashew apples during food preparation. The reaction began within 20 minutes of contact, manifesting as reddish, intensely itchy blisters on both hands, involving the fingers, palms, and wrists, with extension to the distal third of the forearm. Additionally, a maculopapular rash developed over the affected forearm. Initially, the patient experienced erythematous skin rashes, swelling, and a burning sensation at the site of contact. This progressed to pustular-vesicular eruptions that evolved into bullae, which eventually ruptured, resulting in erosions with serous discharge (Figure 1, 3 and 5).

The patient had no prior history of allergy after exposure to cashew nuts and was handling wet cashew apples for the first time. There was no history of allergies, diabetes, or hypertension, and no family members with similar allergic reactions.

The treatment regimen given is Omnocortil 10 mg, taken twice daily, and Roxithromycin 150 mg, administered one hour before meals. In addition, antihistamines and antacids were included in the plan as a systemic therapy and cream mupirocin 2% (w/w) was applied twice daily to the affected areas for topical use.

The patient then recovered from the symptoms of irritant contact dermatitis. There were no any skin lesions or discharge after the treatment. (Figure 2, 4 and 6) Patient was advised to stay away from cashew apples and an allergy test was planned to identify the specific substance in the cashew apple that caused the reaction.



Figure 1: Dorsum of left hand before tretment.



Figure 2: Dorsum of left hand after treatment.



Figure 3: Dorsum of right hand before treatment.



Figure 4: Dorsum of right hand after treatment.



Figure 5: Palmar side of right and left hand before treatment.



Figure 6: Palmar side of right and left hands after treatment.

DISCUSSION

Anacardium occidentale, commonly known as the cashew tree, produces nuts that are widely consumed globally. However, its shell oil contains a group of phenolic lipids primarily anacardic acid, cardol, and cardanol that can cause significant skin irritation upon contact.⁷ These compounds are structurally related to urushiol, the active irritant in poison ivy and poison oak, and are known to induce both irritant and ACD depending on the nature and duration of exposure.⁸

In this case, the patient developed an extensive, sharply demarcated dermatitis involving multiple body regions after handling raw cashew nuts during food preparation. The acute onset of erythema, vesiculation, and burning sensations shortly after contact, without any previous sensitization, supports a diagnosis of ICD. Unlike ACD, which requires a sensitization phase and typically presents with delayed-type hypersensitivity reactions,

ICD is a non-immunologic inflammatory response that can develop in any individual exposed to a sufficient concentration of an irritant.⁹

While ICD from *A. occidentale* is well documented in industrial settings, especially in workers involved in nut shelling or processing,¹⁰ it is less commonly reported in domestic environments. The severity of dermatitis in this case may be attributed to the prolonged direct contact with the shell oil during manual handling, combined with the absence of protective measures such as gloves or barrier creams. Prior studies have shown that even brief contact with raw cashew shell oil can result in significant cutaneous inflammation.^{11,12}

Management of ICD primarily involves immediate cessation of exposure, symptomatic treatment with topical or systemic corticosteroids depending on severity, and prevention of secondary infection. In this patient, systemic corticosteroids were administered due to the extent of the lesions and associated discomfort, resulting in a favorable response. Patch testing was not deemed necessary given the clear temporal relationship between exposure and symptom onset, and the absence of a previous history of atopy or known allergies.

This case highlights the importance of public awareness regarding the dermatotoxic potential of raw cashew shells, especially in regions where traditional or household preparation methods are still practiced. Protective measures such as wearing gloves and avoiding direct skin contact during processing can significantly reduce the risk of dermatitis. Furthermore, clinicians should maintain a high index of suspicion for plant-derived irritants when evaluating acute-onset dermatitis with a clear exposure history.

CONCLUSION

To conclude, cashew nuts, which come from the *Anacardium occidentale* tree, are valuable worldwide for their economic importance. However, contact with the cashew apple and shell can lead to skin reactions like irritant and ACD. A case study highlighted how handling raw cashew apples led to a severe skin reaction, caused by the irritants in the cashew shell oil, similar to those in poison ivy. This case emphasizes the importance of taking protective steps, such as wearing gloves, when handling cashew products, and raises awareness about the potential skin risks associated with them.

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