

Cardol Catastrophe: A Case Report

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Abstract

A case of extensive irritant contact dermatitis caused by cardol is reported for the first time. A 52-year-old male patient presented with acute dermatitis on trunk and extremities after cashew nut oil fell on his body while he was unloading barrel of oil from a truck. He was diagnosed as a case of irritant contact dermatitis due to cardol and was treated with cold compresses, antihistamines and systemic steroids. Skin lesions subsided in two weeks' time leaving depigmentation and scarring. As the medical literature is scarce with reports on cardol dermatitis, this case is reported to create awareness among medical fraternity to help make a prompt diagnosis and to render early treatment. Cardol dermatitis is not mentioned in standard dermatology text books or journals.

Keywords: Cardol • Dermatitis • Cashew • Cashew oil • Boat

Introduction

Cashew nut oil or cardol induced dermatitis is scarcely reported in medical literature. Very few cases of perioral dermatitis to cashew nut are reported. Contact dermatitis in cooks using cashew nut is also reported. A case of extensive involvement with cashew nut oil has never been reported earlier. This patient brought large quantity of cashew nut oil in barrels for painting country boat [1].

Clinically recognized as a dermatitis with flexural accentuation, systemic contact dermatitis is caused by the cashew nut shell oil resorcinol allergens cardol and anacardic acid. It usually affects the extremities, groin and buttocks and usually develops one to three days after ingesting raw cashew nuts contaminated with allergenic oil.

Although they are frequently employed in medicine, botanicals can potentially result in dermatitis. Five main types of plant-induced contact dermatitis exist. These include contact urticaria (immunologic or toxin-mediated, mechanical irritation, chemical irritation, allergic sensitization and photosensitization). Plant-based products are the cause of most cases of allergic contact dermatitis and have a number of harmful cutaneous effects. Toxicodendron plants are the primary cause of allergic contact dermatitis in the United States [2].

Poison ivy, poison oak and poison sumac are caused by the *Rhus* species, which are also members of the *Anacardiaceae* family of plants, which includes the cashew tree, *Anacardium occidentale*. The cashew apple is a pear-shaped fruit that grows on this tree.

The cashew nut is located on the fruit's distal end and is not covered with fruit pulp. It is made up of an exterior shell with two layers and an inside kernel. An oil with 12 chemically different antigens, such as cardol and anacardic acid, which are immunochemically related to the pentadecylcatechols present in the *Rhus* species, is trapped between the layers of shell [3].

These oils are both allergic and irritating. Before being imported into the US, cashew nuts undergo a partial processing to remove oil and shells. They are then boiled and packaged in preparation for distribution. Workers who manually shell the nuts frequently suffer from pruritic dermatitis. The incidence of dermatitis among labourers has decreased because to modern processing equipment, which has also improved cashew nut oil extraction efficiency.

Cashew nut oil, particularly cardol-induced dermatitis, is an uncommon condition with very few reported cases in medical literature. This rarity often makes it difficult for healthcare providers to promptly diagnose and treat affected individuals, as there is a general lack of awareness about this condition. The literature includes occasional cases of perioral dermatitis from cashew nuts, particularly in individuals who have come into contact with cashew nuts while cooking. However, cases involving extensive dermatitis caused by cashew nut oil are exceedingly rare, with no previous reports of such severe reactions documented before. This article highlights the first reported case of widespread irritant contact dermatitis due to cardol, a toxic component found in cashew nut oil.

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Cashew nut oil contains allergens like cardol and anacardic acid, both of which can cause irritant and allergic contact dermatitis. These substances are found in the cashew nut shell oil, which is a byproduct of the cashew processing industry. In this case, the patient, a 52-year-old male fisherman, experienced a severe skin reaction after cashew nut oil spilled on his body while he was unloading barrels of the oil intended for use on his fishing boat. The oil was to be applied to the boat's undersurface to protect the wood from decay, but it inadvertently caused a dermatological emergency [4].

Irritant contact dermatitis from plant-based products like cashew nut oil falls into the broader category of plant-induced contact dermatitis. There are five primary types of plant-induced dermatitis: Contact urticaria (which can be immunological or toxin-mediated), mechanical irritation, chemical irritation, allergic sensitization and photosensitization. Cashew oil-induced dermatitis is an example of chemical irritation, where the toxic resorcinol allergens-cardol and anacardic acid-come into direct contact with the skin, causing inflammation. These allergens are structurally related to pentadecylcatechols found in the toxicodendron plants, such as poison ivy, poison oak and poison sumac, which are common causes of allergic contact dermatitis.

The patient in this case presented with acute dermatitis characterized by erythema, oozing, vesiculation and a burning sensation over his trunk and extremities. His symptoms developed rapidly following exposure to the oil and his treatment included cold compresses, antihistamines and systemic steroids. Over the course of two weeks, the lesions healed, though they left behind scarring and depigmentation in some areas [5].

This case report is important not only for its clinical novelty but also for its implications in the broader context of occupational hazards. Workers in industries that handle cashew nut oil, particularly in regions where traditional methods of processing are still employed, may be at risk of similar reactions. Modern cashew processing techniques have reduced the incidence of dermatitis among laborers, but the case highlights the need for ongoing awareness and protective measures in environments where cashew oil is handled [6].

Case Presentation

A 52-year-old male fisherman was brought for extensive skin lesions of erythema, oozing and vesiculation with burning sensation on trunk and limbs of one-day duration. While he was trying to unload a barrel of cashew nut oil from a truck, oil accidentally fell on his body and caused the skin lesions. His general condition was stable. Complete blood count, renal function tests, liver function tests, CRP were normal. The patient was treated with antihistamines, cold compresses and systemic steroids. After three days, skin lesions started drying up and in two weeks' time lesions completely healed leaving depigmentation and scarring in some areas (Figures 1 and 2) [7].



Figure 1. Barrel with cashew oil.



Figure 2. Post cardol dermatitis scar and depigmentation.

Results and Discussion

Cashew nut oil was brought by this patient to apply on the undersurface of his fishing country boat to give smooth sailing in water and to prevent decay of wood which can happen as the boat is in water continuously for a long time. Cashew (*Anacardium occidentale*) is grown for seeds which is obtained by roasting process. A byproduct of the process is Cashew Nutshell Liquid (CNSL) which on heating produce cardol. Cardol is resorcinol substituted at position 5 by a pentadecyl chain. Cardol is very toxic and corrosive. It can cause inflammation of eyes, skin and throat. Cardol is used for antitermite treatment also. This is also used as pesticides. Cardol is related to urushiol found in well-known poison ivy. Resorcinol is found in mango also [8].

Conclusion

Systemic contact dermatitis from the cashew nut shell oil resorcinol allergens cardol and anacardic acid is recognized clinically as a dermatitis with flexural accentuation, typically distributed on the extremities, groin and buttocks and occurring generally 1 to 3 days after ingestion of raw cashew nuts contaminated with ergenic oil. Dermatitis due to cashew nut is also reported. Cardol induced extensive dermatitis is not reported in medical literature.

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