

CONTACT DERMATITIS DUE TO CASHEW NUT (*ANACARDIUM OCCIDENTALE*) SHELL OIL, PERICARP AND KERNEL

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A 21-year-old worker developed itching, fissuring and exudative lesions on her hands and fingers, 3 years after working as a cutter in the cashew nut factory. The lesions would improve during holidays or after she left her job. Patch tests were positive with the 0.1% cashew nut shell oil in polyethylene glycol and also with the red pericarp covering and the kernel of cashew nuts used as such.

Key words : Contact dermatitis, Cashew nuts.

During a recent survey for the dermatologic problems of cashew nut workers, our attention was drawn to a lady worker who was alleged to have an allergic reaction to the cashew nuts. A report on the investigations of this case follows.

Case Report

A 21-year-old girl started working in the cutting section of the cashew nut factory where she was engaged to cut the hard shells to liberate the cashew nut kernels. She was thus exposed to the cashew nut shell oil and also the castor oil which these workers apply on their hands as a protective. Three years after starting this work, she noticed itching on both her hands and fingers, and within a month she developed fissuring and exudative lesions. She would improve on taking off from duty, but the lesions would recur on resuming work. She also started having episodes of fever, rhinitis and lacrymation lasting for 4-5 days. On being transferred to the peeling section where she was exposed to the cashew nut kernels and the thin reddish pericarp and not the shell oil, she improved, but was not completely relieved. She therefore left the cashew nut factory and joined the bidi manufacturing factory.

Her condition improved although pruritus did not subside completely. Further interrogation revealed that her younger sister was working in the cashew nut factory and used to bring cashew nuts home for peeling, and our patient did help her sometimes. At the time of examination, she had a few scattered papulo-vesicular lesions present on the dorsa of hands, fingers and forearms.

An open patch test performed with the cashew nut shell oil produced the cauterization type of reaction which was surrounded by papulo-vesicular lesions. Standard occluded patch tests with 10%, 1.0% and 0.1% concentrations of the cashew nut shell oil in polyethylene glycol, and cashew nut pericarp and the cashew nut kernel crushed and applied as such showed papulo-vesicular reactions, while patch tests with castor oil and polyethylene glycol (control) were negative.

Comments

In India, cashew nuts are grown and processed chiefly in Kerala, Tamil Nadu, Andhra Pradesh, Maharashtra and Goa. The cashew apple is eaten as such and also used to make jams, jellies and beverages. The cashew gum obtained from the tree is used for tanning leather and glues. The cashew nut kernels are eaten as such or used for making sweets, ice-creams and confectionary items. The wood is used for making crates and boats, or as fuel.

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The cashew nut shell oil is used for making resins, varnishes, printers ink, typewriter rolls, pesticides, lubricants and electric insulations.^{1,2}

The shell oil contains 90% anacardic acid and 10% cardol,¹ but during heating most of the anacardic acid gets converted into cardanol. Similar compounds are present in other parts of the plant also, although in a lower concentration. The kernels are likely to get coated with the shell oil. The shell oil has a strong cauterizing action on skin, and repeated exposures of the workers to the shell oil produces a variety of skin changes which are attributable to the cauterizing action of the shell oil.³ These changes occur in almost all the workers in the cutting section. Open patch tests with the shell oil used as such in 36 workers produced only the cauterizing type of reaction. Similar reactions were observed with the standard occluded patch tests with 10% shell oil in polyethylene glycol. There were no papulo-vesicular reactions in any of the workers tested.³ This patient was the only one who developed the typical papulo-vesicular reaction characteristic of the allergic type of patch test reactions. While investigating these cases, it is therefore essential to distinguish instances of true allergic hypersensitivity from those of cauterization/irritant reactions. We feel that the instances of contact dermatitis in children caused by the toys made from cashew nut shells,⁴ ulcerated lesions on the chest caused by the sap of the cashew plant stem, and blisters on the lower lip following biting the cashew apple,⁵ and the eyelid dermatitis caused by contact with rubber

gloves contaminated with cashew nut shell oil,⁶ are more likely to be instances of irritant/cauterization reactions; because allergic reactions do not as a rule occur in a large proportion of the individuals exposed to the agent⁴.

The dermatitis reported by Ratner et al⁷ was caused by eating the cashew nuts in patients who already had contact hypersensitivity to the *Rhus* antigen. Cross sensitivity between members of the *Anacardiaceae* family such as the mango (*Mangifera indica*) fruit skin, the India ink tree, the Indian marking nut (*Semecarpus anacardium*), ginkgo (*Ginkgo biloba*) fruit pulp, the Rengas (*Gluta renghas*) tree, the Japanese lacquer tree and the American poison ivy (*Rhus*) plant (*Toxidendron sp*) is well known.^{2,6} The compounds responsible for the dermatitis are derivatives of catechols.

References

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