

**Original article:**

## **Allergic Contact Dermatitis by *Semecarpus Anacardium* for Evil Eye: A prospective study from Central India**

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### **Abstract:**

**Introduction:** In central India evils eye protection by burning of *Semecarpus Anacardium* Linn seeds is very common practice. The smoke produced by burning of *Semecarpus Anacardium* Linn seeds can cause allergic contact dermatitis over a time. This study was designed to diagnose the actual cause of allergic contact dermatitis in patients exposed to smoke of burning of *Semecarpus Anacardium* Linn seeds.

**Material and Method:** a total of 40 patients of allergic contact dermatitis and exposed to smoke of *Semecarpus Anacardium* Linn seeds and 40 healthy controls were recruited for the study. A patch test was performed contacting urushiol as an additional allergen in finn chamber. Urushiol is an active ingredient of smoke of *Semecarpus Anacardium* Linn seeds

**Results:** All the patients were found sensitive to urushiol and none of the healthy control was found sensitive to urushiol in the patch test.

**Conclusion:** Urushiol is an active allergen found in *Semecarpus Anacardium* Linn seeds and responsible of allergic contact dermatitis in patients exposed to smoke of *Semecarpus Anacardium* Linn seeds.

**Keywords:** *Semecarpus Anacardium* Linn, Urushiol, Allergic contact dermatitis

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### **Introduction:**

Contact dermatitis is a condition in which the skin becomes red, sore, or inflamed after direct contact with a substance. There are two kinds of contact dermatitis: irritant or allergic. Most often this occur when something that touches the skin causes irritation (irritant contact dermatitis) or an allergic reaction (allergic contact dermatitis). Contact dermatitis frequently develops on the forearms and face. Repeat exposure to substances that over time irritate the skin.

Contact dermatitis is an inflammatory response of the skin to an exogenous substance. The agent which produces this type of dermatitis is called contact antigen. Although in a particular individual any agent

may cause contact hypersensitivity, some substances are known to be more potent contact sensitizers than others. The incidence of contact dermatitis in general population was estimated to be 1.7 to 6.3%[1-2].

As human life becomes increasingly complex, our skin is exposed to an ever- increasing spectrum of chemical and biological products. Inevitably, the incidence of allergic sensitization is showing a steady rise. Allergic contact dermatitis (ACD) develops in only a small proportion of sensitized individuals. However, the true incidence of ACD in a society is very difficult to estimate since its diagnosis depends on several factors such as the demographic profile of patients, index of suspicion of the physician, and availability of patch testing. Common sensitizers also

vary with place, patient profile and over the passage of time. Since optimal treatment of patients with ACD is predicted on accurate advice about prevention, regular patch testing followed by estimation of relevance is imperative in all suspected cases[3]. The median prevalence of contact allergy to at least 1 allergen was 21.2% (range 12.5-40.6%), and the weighted average prevalence was 19.5%, based on data collected on all age groups and all countries between 1966 and 2007.[3]

Plants are either less common source of contact dermatitis or a less commonly reported source according to a data reported by Halkier-Sørensen[4]. The American Academy of Dermatology estimates that there are up to 50 million cases of urushiol-induced dermatitis annually in the United States alone, accounting for 10% of all lost-time injuries in the United States Forest Service[5].

*Semecarpus Anacardium Linn*, (Family: *Anacardiaceae*), is the nut commonly known as 'marking nut' and in the vernacular as 'Ballataka' or 'Bhilawa', has been used in various traditional system of medicines for various ailments since ancient times. Its nuts contain a variety of biologically active compounds such as biflavonoids, phenolic compounds, bhilawanols, minerals, vitamins and amino acids[6], which show various medicinal properties. The fruit and nut extract shows various activities like anti-atherogenic, anti-inflammatory, antioxidant, antimicrobial, anti-reproductive, CNS stimulant, hypoglycemic, anticarcinogenic and hair growth promoter[7-15]. Tarry oil present in the pericarp of the fruit contain Anacardic Acid that contains urushiols, which cause blisters on contact. So there is every chance of accidental poisoning causing contact dermatitis in children, and also in

adults during the time of Bhallataka shodhana( purification of *Semecarpus Anacardium Linn*).

The evil eye is a malevolent look that many cultures believe able to cause injury or misfortune for the person at whom it is directed for reasons of envy or dislike. The burinazar (evil eye) is a big deal in India. It's commonly believed that, should someone curse you with it, the negative energy will bring about all kinds of illnesses and misfortunes. The threat of this prompts people into taking enthusiastic protective actions ranging from drawing big black dots on babies' foreheads to chanting mantras, and engaging the services of pandits (Hindu priests) and astrologers, to ward it off.

Practice of getting rid of evils eye using *Semecarpus Anacardium Linn* seeds is very common in Malwa region. Procedure is commonly done by females in which they use *Semecarpus Anacardium Linn* seeds, they waive seeds from top to bottom of children and then burn these seeds and the smoke produced cause allergic contact dermatitis in susceptible individuals. This practice is mostly observed in case of children in whom affected individuals are mostly females as they are generally doing this as a part of custom in most of the families

The diagnosis is made with the help of history of patient and patch test. Patch testing helps identify which substances may be causing a reaction in a patient.

Present study therefore attempts to determine the feasibility of diagnosis of allergic contact dermatitis in patients having contact dermatitis using *Semecarpus Anacardium* as evils eye.

#### **Material and Methods:**

This study comprised of total of 80 subjects, out of which 40 presented with history of exposure to *Semecarpus Anacardium* using it as evil's eye in

Malwa region of India attending the out-patient department of Skin & V.D. at Sri Aurobindo Medical College and Postgraduate Institute, Indore from Nov. 2011 to April 2013 and 40 age, sex matched healthy subjects with no prior exposure were taken as control. Pregnant women, patients suffering from immunosuppressive conditions like HIV, Diabetes Mellitus, and primary immune deficiencies and Patients on long term steroids/ immunosuppressive drugs were excluded from the study.

**Patient Evaluation:** A special proforma was prepared to include all the details including age, sex, and occupation. Detailed history was also taken with particular references to the onset, duration and evaluation of symptoms, constitutional and systemic disturbances, pre-existing skin disease, predisposing factors and details of topical and systemic medications. Detailed examination carried out in all the cases to find out the precise distribution and morphology of the lesions and to detect the evidence of any pre-existing skin disorder or any associated dermatitis. The patch test was explained to patient and consent was obtained in every case. After the allergen is identified by the Patch test the patient was advised to avoid those substances which contain the specific allergen.

Patch test was performed using modified Finn chambers containing urushiol as additional allergen besides the standard allergens. Prepared patches were applied to the upper back adjacent to the vertebrae. An alternative application site was the outer surface of the upper arm. Patients were asked to refrain from exposing patch tests to excess moisture or sweat and should return for patch test removal in 48-72 hours.

**Results:** The mean age of patients was  $28.1 \pm 5.2$  years. A female preponderance was observed in our

study as 90% were females and only 4(10%) patients were male.

The primary site of lesion was hands which further progressed to forearms and then arms and face[figure 1]. Very few patients showed back, feet and lower limbs involvement.

A positive family history of atopy and allergic conditions do exist like few patients have shown correlation with allergic rhinitis, allergic conjunctivitis, urticaria, asthma and atopic dermatitis. Most common associated allergic condition was Allergic Rhinitis (10%) i.e. in 4 patients.

All the 40 patients of contact dermatitis have a symptom of erythema. Other than erythema, 39 patients have papular eruptions out of which 4 patients had oozing and 2 have vesiculation and 2 had both oozing and vesiculations.

Time of presentation after exposure is 2-3 days (48-72hrs) in majority of cases but in cases of the patients who had history of recurrence presented within 4-5 hrs.

All the 40 patients were found sensitive to urushiol in the patch test[Figure 2] and none of the control were found sensitive to urushiol.

Out of 40 patients, 1 patient shows positive results to 4 allergens (balsam of peru, mercaptobenzothiazole, nickel sulphate, fragrance mix), 1 patient shows positive results to nickel sulphate and 1 shows positive results to parthenium.

Antihistamines and topical steroids were given as first line of treatment in patients. In 2 severely affected patients systemic steroids were given.

#### **Discussion:**

It is estimated that 5-10% of cases of contact dermatitis were determined by plants[16]. Compositae family contains over 13,000 species, some of them are food, for consumption, other are

cultivated as ornamental plants (chrysanthemums) and other (arnica, marigold) are medicinal plants. Schimdt in 1986 showed that repeated exposure causes often acute contact dermatitis, with frequent relapses and subsequently it becomes chronic, with lichenification. When it is located at the level of the elbow or knee it can simulate an atopic dermatitis. Originally localized lesions at the level of the face, hands and genitals may disseminate and have a bad prognosis, evolving to erythroderma[17]. Also, the remaining dust from these plants may induce air borne dermatitis, frequently encountered situations in the regions of desert in the US and Australia.

*Semecarpus Anacardium* is used for various medicinal properties. The fruit and nut extract shows various activities like antiatherogenic, antiinflammatory, antioxidant, antimicrobial, anti-reproductive, CNS stimulant, hypoglycemic, anticarcinogenic and hair growth promoter. More efforts are needed to study the traditional uses of the plant and the subsequent validation of activity and the mechanism of action.

When the tarry oil comes in contact with skin, it produces dermatitis.[13] Medically it is named as urushiol-induced contact dermatitis. The symptoms

include itching, redness, burning sensation, swelling, papules, vesicles, blisters, and streaking. Sometimes it may result in an allergic eczematous contact dermatitis. The rash takes 1–2 weeks to run its course and normally does not leave scars. Severe cases have small (1–2 mm) clear fluid-filled blisters on the skin. Pus-filled vesicles, containing a whitish fluid, may indicate a secondary infection. Excessive scratching may result in secondary infection, commonly by staphylococcal and streptococcal species. In our series of patients the erythema was the main clinical symptom. Recently llanchezhian et al also reported the cases series of five patients with urushiol induced allergic contact dermatitis. All the five patients were working on purification of *Semecarpus Anacardium Linn* seeds. However they have not performed any patch test that shows the allergic contact dermatitis was due to urushiol. In our study we confirm that person exposed to smoke of *Semecarpus Anacardium Linn* were sensitive to urushiol in patch test.

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**Figure 1:** patients having urushiol induced contact dermatitis caused by *Semecarpus Anacardium*

**Figure 2:** Patient showing positive patch test for urushiol

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