

A CASE OF TUNG NUT SENSITIVITY

By

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A. M. a male post graduate student aet 26, in the Department of Industrial Chemistry, was seen by Dr. I. Ansell on 8/12/50 complaining of violent attacks of sneezing and conjunctivitis progressing to dyspnoea and wheezing, when in contact with Tung nuts. The patient has supplied the following details.

"Tung nuts are derived from the trees of two species of Euphorbiaceae family, *Aleurites Ferdii* and *Aleurites Montana*. The oil can be extracted from the crushed or milled nuts by extraction with a variety of solvents such as light petroleum, acetone, ether, benzene etc.

"During a solvent-extraction experiment the patient was filtering a suspension of the crushed nuts in light petroleum when some of the suspension splashed into his face and eyes. Severe conjunctivitis resulted almost immediately, the attack taking several days to wear off. Subsequent to this, any contact with the dry solvent-extracted meal caused an immediate attack of hayfever, violent sneezing, bronchial pain and asthma.

"Later, contact with the meal of a related species of seed in the form of its solvent-extracted meal, also caused the same attack. This seed was *Aleurites Moluccana* (lumbang or candlenut seed). There are other *Aleurites* species but the patient has not come into contact with them."

Clinical examination showed a vital capacity of 2,500 cc; radiological evidence of slight chronic bronchitis and emphy-

sema; and a blood eosinophilia of 7 % in a total white count of 8,200. Otherwise findings were normal.

He was referred to the Allergy Clinic for investigation. Intradermal tests to feathers, horsehair, cat and dog hair, housedust and groups of mould spores were all negative. A minimal response was given to a mixed pollen extract. The patient had brought with him some Tung nut meal and a particle of this, moistened with normal saline, produced a violent positive scratch reaction; a similar test performed on the operator's arm was negative.

Using Coca's method, a sterile aqueous extract of Tung nut meal was prepared and dilutions of this up to 1/10,000 were made up. A scratch test still gave a positive response to this final dilution and it was decided to use this for the commencing doses of a course of hyposensitizing injections given twice a week. This continued satisfactorily until an injection of 0.05 ml of 1/100 dilution was reached, at which stage in error, the bottle of 1/10 dilution was used. Within half an hour there was a violent general reaction; an urticarial rash covered the whole body; there was an acute conjunctival suffusion; dyspnoea and bronchospasm were severe and distressing. These symptoms rapidly disappeared after administering Benadryl 50 mgms orally and 0.5 ml of Adrenalin Hydrochlor. (1/1,000) subcutaneously. The course of injections was continued and when a dose of 0.1 ml of 1/10 dilution was reached skin tests showed a mildly positive response to 1/100 dilution and a negligible response to 1/1,000 dilution.

At this stage (31/7/51) the patient was unable to continue attendance for various personal reasons. There was considerable clinical improvement and his contact with Tung nuts was becoming less frequent.

When seen again one year later (31/7/52) he stated that any close contact with Tung nut meal still produced conjunctival and nasal irritation which rapidly progressed to asthma. Scratch tests repeated at this time gave a positive (+) reaction only to 1/10 dilution. Tests were also carried

out with protein extracts of ground nuts, walnuts and almonds with negative results. Candlenuts were unfortunately not obtainable. The patient would have liked to resume the hyposensitization treatment from scientific as well as personal motives but unfortunately was returning to his home in South Africa and there was not time for this to be carried out.

DISCUSSION

Tung nuts are the manufacturing source of Tung oil which is a quick-drying oil largely used in lacquers and paints. The oil has been recognised as a sensitizing agent for some time and this aspect is fully reviewed by Swaney (1). Most of the records however, deal with dermal reactions. In Swaney's case, where dermatitis persisted for many months, complete relief followed a series of injections of a 1 % solution of Tung oil dissolved in olive oil. The skin condition recurred however, when the slightest contact with Tung oil vapours was renewed. Kronstein (2) refers to the fact that the vapours of heated Tung oil act as "irritants upon the eyes and mucous membranes". Thomson (3) believed that the irritant properties of Tung oil were due to adulteration with Chinese lacquer oil produced from the poisonous Sumach (*Rhus vernicifera*). No cases appear to have been recorded of sensitivity to Tung nuts themselves or to the oil-free meal.

In this case sensitivity appears to have been produced by a fairly massive conjunctival contact with a suspension of ground Tung nuts. This sensitivity was towards the oil-free meal and allergenic substances were present in the water-soluble fraction of this meal to a considerable degree. Avoidance of contact with the nuts or meal ensured freedom from symptoms. During the course of hyposensitization an unusually large dose, given in error, reproduced severe allergic manifestations. An uncompleted course of hyposensitization produced some amelioration of symptoms and a very considerable decrease in the skin sensitivity reaction. Passive transfer tests were not carried out.

SUMMARY

1. A case is described of sensitivity to Tung nuts.
2. Treatment, which was incomplete, produced clinical improvement and a quantitative reduction in the skin sensitivity reaction.

My thanks are due to Dr. Ansell who carried out the clinical investigations before referring the case to me, to Dr. Carl Brundrett for his laboratory work, and to the patient for his active co-operation and help.

REFERENCES

- (1) *Swaney, M. V.*: Ind. Eng. Chem. 1938, 30, 514.
- (2) *Kronstein, U. S.*: PAT 737, 249 (Aug. 25, 1903).
- (3) *Thomson, J. C.*: Thesis Columbia University 1933.

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