

Cinnamon dermatitis from an ointment

C. D. CALNAN

St. John's Hospital for Diseases of the Skin, Leicester Square, London, Great Britain

Six patients are reported who had an allergic contact dermatitis from the use of a proprietary antiseptic ointment containing oil of cinnamon. Three were positive and three negative to balsam of Peru; two of these and one other also reacted to cinnamic aldehyde.

The history and usage of cinnamon is briefly reviewed.

Key words: balsam of Peru – cinnamic aldehyde – cinnamon.

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Although allergic reactions from cinnamon have been known for a long time, there has been renewed interest in dermatitis from it, perhaps because of its recent use in a widely marketed toothpaste (Millard 1973; Magnusson & Wilkinson 1975) and a greater appreciation of its use in perfumery (Schorr 1975).

Apart from its usage in bakery, cooking, confectionery, toothpastes and dentifrices, perfumes, cosmetics and on toothpicks, the use of oil of cinnamon and its ingredients or derivatives in proprietary medicines is not often mentioned, although balsams have been widely used.

Over a period of ten years, I have seen six patients with a contact dermatitis associated with the use of a proprietary preparation, TCP ointment (Unicliffe Limited) which contains oil of cinnamon.

Case Reports

Case 1

K. P. Man aged 32. Photographic salesman.

He had pruritus ani for four months, for which he had used at least seven topical applications; he subsequently developed dermatitis of his palms and fingers. He has noted that some of the medicaments used had made his pruritus ani worse.

His previous history was negative for eczema, asthma and hay fever; but he had developed a rash on three occasions after oral penicillin therapy.

Examination showed some residual dermatitis of the right palm only. Perianal scrapings were negative for candida. Initial patch tests gave the following results:

	48 h.	96 h.
Standard series	—	—
Balsam of Peru 25 % pet.	—	—
Xyloproct ointment	—	—
Savlon cream	—	—
Nystaform HC cream	—	—
TCP ointment	++	±
Terracortril ointment	—	—
Locan cream	—	—

Because of the reaction to the proprietary TCP ointment, its formulation was re-

quested and received from the manufacturer; each of the ingredients was appropriately diluted and tested separately. The results were as follows:

	48 h.
TCP Antiseptic 5 % aq.	—
Cinnamic aldehyde 1 % pet.	+++
Other ingredients	—

An open test with TCP ointment on the forearm was strongly positive.

In order to determine whether this patient would react to oral exposure, he was asked to consume some cinnamon. Instead, he purchased for himself a sample of cinnamon powder and a proprietary brand of cinnamon essence. He applied these undiluted to his forearm and produced a severe positive reaction to each. He dipped a finger once into the cinnamon powder and ate it, but no adverse reaction resulted. It is likely that the amount consumed was inadequate.

Case 2

W. A. C. Man aged 49.

He presented on April 9 with a four-year history of a red scaly eczematous eruption on the palms and soles, ankles and legs, which later spread to the waist and chest. His father and two sisters also had eczema, and a diagnosis of endogenous eczema was made. In September he complained of anogenital dermatitis and his palms and soles were worse. He had been using TCP ointment. He ceased using it and the dermatitis resolved. Subsequent patch tests showed:

	48 h.	96 h.
Balsam of Peru 25 % pet.	+	+
Rest of standard series	—	—
TCP ointment	++	++

He was then tested to an experimental balsam of Peru series (supplied by the International Contact Dermatitis Research Group):

	48 h.
Eugenol 2 % pet.	—
Pine resin 25 % pet.	—
Spruce resin 25 % pet.	—
Benzyl benzoate 5 % pet.	—
Benzyl salicylate 2 % pet.	—
Benzyl cinnamate 5 % pet.	—
Vanillin 10 % pet.	—
Methyl cinnamate 5 %	—
Cinnamic alcohol 1 % pet.	++
Cinnamic aldehyde 1 % pet.	++
Cinnamic acid 1 % pet.	—

Case 3

C. H. S. Man aged 65.

He was first seen in May 1974 with a history of neuropathic trophic ulcers of the feet for over thirty years. In 1973 an eczema developed round the lower legs and later spread to the trunk and limbs. Ulcers appeared round the ankles. He had used a wide variety of local applications including TCP ointment, some of which had aggravated his condition. The results of the patch tests were as follows:

	48 h.	96 h.
Colophony 20 % pet.	—	+
Balsam of Peru 25 % pet.	—	—
Neomycin 20 % pet.	—	+
Rest of standard series	—	—
TCP ointment	++	++
Furacin ointment	++	++
Transvasin ointment	+	+

An open test on the forearm with TCP ointment was positive.

Case 4

W. M. Woman aged 54.

She presented in September 1964 with a history of two small 'insect bites' on her neck to which she applied TCP lotion and TCP ointment for five days. A rash developed on her neck and spread; mepyramine cream was then applied. The condition was diagnosed as an acute contact dermatitis, but rapidly settled with topical steroid therapy. She had a past history of metal

allergy. The results of the patch tests were as follows:

	48 h.	96 h.
Nickel sulphate 5 % pet.	+	+
Balsam of Peru 25 % pet.	—	—
Colophony 20 % pet.	—	—
Turpentine 5 % o.o.	—	—
TCP ointment	—	+
Mepyramine cream	+	++
Mepyramine 2 % pet.	+	+
Iodine 0.5 % K.I.	—	—
Phenol 1 % aq.	—	—
Salicylic acid 2 % pet.	—	—

Case 5

J. G. Man aged 50.

He was seen in December 1964 with a six months' history of an itchy rash on the arms and abdomen. He had a chronic eczema of the ankle and this had recently become worse. He had used TCP ointment. The results of patch tests were:

	48 h.	96 h.
Neomycin 20 % pet.	±	+
Balsam of Peru	±	—
Turpentine	—	—
TCP ointment	+	+

Case 6

R. B. Man aged 46. Jeweller.

For three years he had had a rash on the inner aspect of both ankles. It had spread to the soles and to the palms, with a few patches on the thighs. Some varicose veins were present. He had used TCP ointment and a topical steroid cream, but had not noted any adverse reaction to them.

About ten years earlier he had a dermatitis of the fingers after heavy usage of white spirit. He had never had a skin reaction to toothpaste, perfumes or cinnamon containing foods. Patch test results were as follows:

	48 h.	96 h.
Turpentine 1 % o.o.	+	+
Rest of standard series	—	—
TCP ointment	±	+
Balsam of Peru 25 % (Swedish)	+	—
Cinnamic alcohol 1 %	+	—

Cinnamic aldehyde 1 %	+
Other ingredients	—

Discussion

The value of spices was recognized more than five thousand years ago, and has long been a most valuable trade. Hence it is not surprising that the spice trade has played an important part in the history of many nations and their trade routes. There are four references to cinnamon and three to cassia in the Bible (Parry 1974).

For almost as long there seems to have been confusion over what is cinnamon and what is cassia (Pharmaceutical Journal 1957). It is true that cinnamon comes from the bark of the bushy, evergreen, *Cinnamomum zeylanicum* tree of the Lauraceae family, which is native to Sri Lanka (Ceylon), Burma and the Malabar coast of India; it is also cultivated in South America and the West Indies. Cassia is derived from the bark of the *Cinnamomum cassia* and *C. laureirii* plants of the Lauraceae family. Cassia is also the generic name of a large number of leguminous plants, many of which yield medicinal products. Cassia is often known as Chinese, Saigon or commercial cinnamon. According to Fisher (1973) cinnamon used in the United States is almost all cassia while in Britain it is almost all true cinnamon.

The Portuguese arrived in Ceylon about 1505, found the cinnamon tree growing wild and took a quarter of a million pounds of the bark per year as tribute from the King. When the Dutch occupied the country in 1656 they exported the cinnamon, and finally planted and cultivated the tree about 1770. Their export of some 400,000 pounds supplied the whole of the European market. When the British captured the island in 1796 the East India Company took over the export of the cinnamon which became its most profitable spice; but the

Dutch planted trees in Java and the export of Ceylon cinnamon fell to 121,000 pounds in 1842, mainly because of a heavy export duty. This was removed and production rose steadily, reaching 6.5 million pounds in 1909. In 1950 the export of Ceylon cinnamon was 7.6 million pounds, Germany being the main European importer.

In Sri Lanka the tree shoots are cut in the wet season, scraped with a knife and then rubbed with a brass rod to loosen the bark, which is split with a knife and peeled off. The peeled bark pieces are telescoped together to form a quill about one metre long. The quills are filled with trimmings from the bark and dried for several days, being finally bleached with sulphur. The bark may also be exported as chips and then ground to be sold as cinnamon powder.

Spices are valued by most peoples of the world, being used mainly for food and drink flavourings but also for medicinal and religious purposes. Cinnamon has been used widely and at one time is said to have been more valuable than gold. In Egypt it was used for embalming and for witchcraft.

Oil of cinnamon is used in medical and veterinary practice as a carminative, astringent, antiseptic and helminthic. In Martindale's Extra Pharmacopoeia there is listed a Cinnamon tincture, compound powder, water, syrup, leaf oil and spirit. Langdale's Cinnamon Essence and Tablets have been sold in Britain for many years; they contain 2.7 and 1.0 per cent of oil of cinnamon. The concentration of cinnamon oil in TCP ointment is 0.19 per cent.

All six patients reported here had a positive patch test to TCP ointment. Three were tested with and reacted to cinnamic aldehyde, only they were positive to balsam of Peru. Hence balsam of Peru (25 per cent

pet.) cannot be relied upon as a detector of cinnamon oil sensitivity. It appears likely, but not proven, that the three patients not

Table 1. Patch test results of six patients with TCP ointment, balsam of Peru (25 per cent pet.) and cinnamic aldehyde (1 per cent pet.).

	Case number					
TEST	1	2	3	4	5	6
Balsam of Peru	—	+	—	—	±	+
TCP ointment	+	+	+	+	+	+
Cinnamic aldehyde	+	+	NT	NT	NT	+

NT = not tested.

specifically tested were allergic to the oil of cinnamon in the TCP ointment.

Finally, it is encouraging to report that the manufacturer has now decided to omit the oil of cinnamon from the formulation.

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Address:

C. D. Calnan
St. John's Hospital for Diseases of the Skin
Leicester Square
London WC2H 7BJ
Great Britain

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