

# Contact Dermatitis due to Traditional Chinese Medicine in Hong Kong

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## ABSTRACT

*Traditional Chinese medicine is the most important alternative medicine in Hong Kong and is often used topically by bone-setters, acupuncturists and patients themselves. The reports on contact dermatitis due to Yunnan Paiyao (雲南白藥), 101 Hair Regrowth Liniment (101 毛髮再生精), Black-Man-Oil (黑鬼油), and Zheng-Gu-Shui (正骨水) are the first few reports in the literature on contact dermatitis due to traditional Chinese medicine which were confirmed by skin patch tests. Having confirmed that certain traditional Chinese medicine can cause contact dermatitis, the next step is to find out which component causes the dermatitis. The studies on Lu-Shen-Wan (六神丸), Tieh-Ta-Yao-Gin (跌打藥精) and bone-setter's herbs (跌打藥), represented our efforts and results in searching for the putative ingredients. Finally, suggestions on preventive measures are made.*

**Keywords:** contact dermatitis, traditional Chinese medicine, prevention, Yunnan Paiyao (雲南白藥), 101 Hair Regrowth Liniment (101 毛髮再生精), Black-Man-Oil (黑鬼油), Zheng-Gu-Shui (正骨水), Lu-Shen-Wan (六神丸), Tieh-Ta-Yao-Gin (跌打藥精), bone-setter's herbs (跌打藥)

## INTRODUCTION

Traditional Chinese medicine is the second most important medical system in Hong Kong. Herbal medicine is often used topically by bone-setters, acupuncturist or patients themselves. From the frequency of usage, it is natural to postulate that contact dermatitis due to herbal medicine should be commonly encountered in this locality. However, up to 1987, this issue was seldom, if ever, reported in Hong Kong or other Chinese communities like Singapore, Taiwan or Mainland China. This article is a summary of the authors' work on this field in the past few years. It is hoped that this review will draw the attention of other colleagues and will encourage them to take part in further research in this important aspect of medicine.

In this article, the use of traditional Chinese

medicine in Hong Kong is briefly discussed first. This is followed by a summary of the authors' earliest case reports on contact dermatitis due to traditional Chinese medicine. Then, difficulties encountered in the search for putative agents are discussed and the results of some interesting studies highlighted. Finally, measures on its prevention are discussed.

## THE USE OF TRADITIONAL CHINESE MEDICINE IN HONG KONG

Traditional Chinese medicine has a very long history. The earliest record of herbal medicine can be traced back to 3494 B.C. when Shen Nong (神農) started "tasting hundreds of herbs so as to find out their properties and to use them as medicine". Herbal medicine was the dominating system of medicine in China till the introduction of western medicine in the nineteenth century when the latter gradually took the lead. However, it is still the most important alternative form of medicine in Hong Kong.<sup>1</sup> According to the authors' observation, the four main reasons that these patients prefer traditional Chinese medicine to western medicine are:

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- a) They believe that herbal medicine is milder and has much fewer side effects than western medicine. Also, combination of different herbs can counteract each other's side effects and enhance their efficacy.
- b) Many believe that though Chinese medicine has a slower onset of action, it can often lead to complete cure of the disease (治本). In contrary, western medicine is only good at symptomatic relief (治標) but seldom cures the disease.
- c) Many believe that traditional Chinese medicine fits the physical or bodily characteristics of the Chinese better than western medicine. Such fit or match is important for better interaction between the medicine and the body's defense system in promoting health and fighting against diseases.
- d) As an alternative to western medicine - especially where the latter fails, for example, in chronic debilitating diseases and end stage malignancy.

Traditional Chinese medicine is often used topically. According to the study in 1987 by the Chinese Medicine Research, Chinese University of Hong Kong,<sup>2</sup> it was found that (a) 98% of bone-setters applied herbal medicine directly onto the injured part, (b) 7% of acupuncturists applied herbal medicine onto the acupuncture site so as to enhance the effect of the needles and (c) self application of topical proprietary Chinese medicine is extremely common in Hong Kong. From the frequency of usage, we would expect that contact dermatitis due to herbal medicine would occur quite commonly here. However, up to 1987, the disease was seldom, if ever, reported in Hong Kong and other Chinese communities like Mainland China, Taiwan and Singapore. Is it really true that traditional Chinese medicine does not cause contact dermatitis? It is certainly not the experience of the authors and perhaps that of other dermatologists or orthopaedic surgeons. In fact, in a one-year study on the etiological factors of contact dermatitis in one of the authors' clinic, traditional Chinese medicine was the second commonest causative agent and accounted for 17.3% of all cases of contact dermatitis during that period.<sup>3</sup>

### EARLIEST CASE REPORTS ON CONTACT DERMATITIS DUE TO TRADITIONAL CHINESE MEDICINE

The following case reports on contact dermatitis due to Yunnan Paiyao, 101 Hair Regrowth Liniment, Black Man Oil and Zheng Gu Shiu are, to the best

knowledge of the authors, the first few reports in the literature on contact dermatitis due to traditional Chinese medicine which were confirmed by skin patch test.

#### Case reports

**Yunnan Paiyao (雲南白藥)**<sup>4</sup> is one of the most popular proprietary preparations on sale in nearly every Chinese drug store in Hong Kong. According to the information leaflet provided, it is "manufactured by a scientific process from famous and precious medicinal materials indigenous to Yunnan" and "it has for decades been used and widely reputed for its effect on arresting haemorrhage, activating circulation, dispersing clots, reducing inflammation, neutralizing toxins and healing wounds." The preparation is supplied in powder and tablet form and may be taken orally or applied topically. A 30-year-old female clerk had a second episode of eczematous rashes after applying Yunnan Paiyao onto her neck. Skin patch test with Yunnan Paiyao powder on petrolatum showed positive reaction. A control study on 20 other patients showed no reaction, showing that the reaction is probably the allergic type. The putative ingredient causing dermatitis could not be determined because the exact ingredients were not specified by the supplier. Our written inquiry to the manufacturer was not answered.

**101 Hair Regrowth Liniment (101 毛髮再生精)**<sup>5</sup> was first marketed in China in 1986. It was reported that its inventor had experimented with various combinations of herbal preparations and discovered that the 101<sup>st</sup> combination worked.<sup>6</sup> The formula contains ten herbs and was claimed to be effective in 97.5% of cases of alopecia treated. The liniment was soon received with great enthusiasm in China and Japan. Two young men, suffering from alopecia areata and androgenetic pattern of baldness respectively, noticed pruritus and erythema after using 101 Hair Regrowth Liniment for a few weeks. Patch testing showed positive reaction. A control study showed no reaction in 20 other patients. We wrote to the inventor for the formula but received no reply. It is understandable why the formula is kept highly confidential, but the secretiveness of various Chinese preparations has been a major obstacle to scientific investigation of traditional Chinese medicine.

The ingredients of **Black Man Oil (黑鬼油)**<sup>7</sup> are: thymol crystal 1%, citronella oil 1%, wintergreen oil 28% and turpentine oil 70%. It is indicated in traumatic

injuries, haemorrhage, snake and animal bites, boils and arthralgia. Two gentlemen developed acute eczematous rashes over his genitalia or neck after using Black Man Oil for 1-3 days. Patch testing them with the oil showed strong bullous reactions. A control study of 20 patients showed 15 positive reactions, suggesting the dermatitis is of the irritant type and that it is a potent irritant. We did not patch test the four ingredients separately partly because strong irritant reactions were expected and partly because their properties were already documented.<sup>8</sup> Of the ingredients, turpentine oil is the most likely putative irritant.

**Zheng Gu Shui** (正骨水)<sup>9</sup> is a Chinese herbal orthopaedic tincture. Its ingredients are as follows: Croton tiglium L (五馬巡城) 18%, Cinnamomum camphora T. Nees et Eberm (雞骨香) 15%, Radix angelicae (白芷) 13%, Mughania macrophylla Kuntze (千斤拔) 12%, Inula cappa DC. (大力王) 12%, Radix pseudoginseng (田七) 25%, menthol (薄荷腦) 3%, camphor (樟腦) 2%. Four patients with sprain joints or arthralgia developed erythema, swelling and pruritus after applying Zheng Gu Shui. They were patch tested with the tincture and all of them showed positive reactions. Eight of the 20 control patients showed positive reaction, which suggested that the reaction is probably the irritant type. The process of manufacturing Zheng Gu Shui was briefly described to us in a reply letter from the manufacturer. The six ingredients other than menthol and camphor are cut up, then added to the distillate. We were unsuccessful in obtaining samples of the eight ingredients from the manufacturer. Should samples become available, there remains a technical problem in preparing the patch test ingredients. Ideally, each ingredient should separately be prepared in alcohol under manufacturing conditions, but this is not practicable in the clinic.

**Significance: traditional Chinese medicine can cause contact dermatitis**

Contrary to the common belief among some medical professionals and the lay public that traditional Chinese medicine is generally mild and has no or little side-effects, the above case reports clearly illustrated that traditional Chinese medicine, just like western medicine, can cause contact dermatitis. The significance of reporting these cases in the literature is that it can alert other colleagues to consider Chinese medicine as a possible aetiology of the eczematous cases they encounter. Only with a high index of suspicion, detailed history taking and skin patch test, can an accurate

diagnosis and hence successful management be achieved. Following our reports, Barbaud et al reported in 1991 a case of contact allergy to colophony in Chinese Musk and Tiger Bone Plaster in France in a Chinese student who treated himself for a contusion of the wrist with a Chinese adhesive plaster.<sup>10</sup> In 1994, Li, Zhao and Li in Beijing reported two cases of exanthematous drug eruption due to two Chinese herbal medicines, Sanjieling capsule (散結靈膠囊) and Huoxuexiaoyan pills (活血消炎丸).<sup>11</sup>

**SEARCH FOR THE PUTATIVE INGREDIENTS AND OBSTACLES TO FURTHER INVESTIGATION**

Having confirmed that certain herbal medicine can cause contact dermatitis, the next logical step is to find out which ingredient is the putative agent. This job is by no means simple. The **major obstacles** are (a) to find out the nature of the ingredients in the preparation, (b) to obtain the ingredients separately, and (c) to prepare them in a suitable form for patch testing. The most important obstacle was clearly illustrated in our studies on Yunnan Paiyao and 101 Hair Regrowth Liniment in which the manufacturers or herbalists refused to disclose their exact formula. The second and third obstacles could be illustrated by the study on Zheng Gu Shui when the manufacturer, though having disclosed their formula, did not supply the ingredients for testing.

We have been trying hard to convince traditional practitioners and suppliers of herbal medicine to reveal the ingredients suspected of causing contact dermatitis and to provide samples for testing. In the following studies on Lu Shen Wan, Tieh Ta Yao Gin and bone-setter's herbs dermatitis, we were more fortunate and had succeeded in identifying the irritant or allergen.

**Successful cases**

**Lu Shen Wan** (六神丸)<sup>12</sup> is a common over-the-counter herbal medicine used for the treatment of upper respiratory infections or applied topically to treat boils, carbuncles, cellulitis and other skin infections. Lu Shen Wan literally means "pills of 6 ingredients with magical effects". The six ingredients are Venenum Bufonis or Toad Venom (蟾酥) 13.3%, Calculus Bovis or Ox Gall-Stone (牛黃) 20.0%, Moschus or Musk (麝香) 20.0%, Borneal (冰片) 13.3%, Pearl (珍珠) 20.0% and Realgar (雄黃) 13.3%. Two elderly housewives complained of

eczematous lesions over their face or neck after using Lu Shen Wan topically. Patch testing them with Lu Shen Wan and its ingredients separately showed that they reacted to Lu Shen Wan and Venenum Bufonis but not to the other ingredients. Subsequent control study showed that the reaction to Lu Shen Wan is probably the irritant type and the irritant is Venenum Bufonis.

**Tieh Ta Yao Gin** (跌打藥精)<sup>13</sup> is an orthopaedic solution and is recommended for the treatment of injuries and bruises of all kinds. The ingredients are as follows: Mastic 12.5%, Myrrh 12.5%, Flos Carthami 13.5%, Catechu 4.5%, Radix Pseudoginseng 12.5%, Aloe 12.5%, Radix Angelicae Sinensis 16.5%, and Sanguis Craconis 15.5%. Three patients with sprain of joints developed acute onset of pruritus, erythema, marked oedema and vesicles at the site of application. They were patch tested with Tieh Ta Yao Gin and the individual ingredients separately. All three showed strong reactions to Tieh Ta Yao Gin. As for the ingredients, one showed reaction to myrrh, one to mastic and one to both myrrh and mastic. A control study on patients with contact dermatitis due to agents other than Chinese herbs showed no reaction to Tieh Ta Yao Gin and its ingredients. This showed that the solution and its ingredients caused allergic type of reaction. The allergens in those three patients are myrrh, mastic, and both, respectively.

Contact dermatitis due to **bone-setter's herbs**<sup>14</sup> is the commonest cause of dermatitis around joints in Hong Kong.<sup>15</sup> Its etiology and clinical features are so characteristic that it deserves to be recognised as a distinct disease entity. In 1991 we reported the symptoms, natural progression, skin biopsy finding, patch test results and response to treatment of 20 such patients. They presented with acute onset of redness, itching and swelling which became more florid over the few days after the herbs were removed. Most of them developed vesicles and bullae. Biopsies showed spongiosis, intra-epidermal vesicles, dermal oedema and perivascular infiltration. They responded well to low dose systemic steroid (20-40 mg prednisolone) but not topical ones. Bone-setter's herbs are prepared from more than 20 different herbs, grounded, mixed and warmed with wine, honey or water, to form a dark-brownish paste and kept in a hot pot. The paste is spread onto a piece of fabric, 2 to 3 inches wide and is applied directly onto the affected area (for example, a sprained joint), supported with a bandage.

The herbs are usually changed once daily. We could find no bone-setter in the series who was prepared to disclose the formulae and to supply the individual ingredients for patch testing.

After many unsuccessful requests to bone-setters for their exact formulae and individual ingredients for patch testing, we tackled the problem from another approach. The bone-setter was requested to supply us with (a) a complete mixture of bone-setters herbs, (b) a mixture of herbs without suspected allergen A, (c) the individual suspected allergen A. By patch testing patients with the above preparations, we could find out whether A was the allergen causing dermatitis in that patient or not. In this way, the bone-setter did not have to disclose his secret formulae. We, in turn, could help them to find out which was the allergen and hence prevent dermatitis in their patients by substituting the allergen with another herb or by omitting it completely. By this method, we succeeded in identifying myrrh as the allergen in a patient with bone-setter's herbs dermatitis.<sup>16</sup> An interesting observation came from our study of controls. Twenty patients with contact dermatitis due to agents other than bone-setter's herbs were patch tested with myrrh. None of them showed any reaction. On the other hand, 20 patients with contact dermatitis due to bone-setter's herbs, when tested with myrrh, twelve showed positive reactions. The negative result in the first group indicated that myrrh is not an irritant. The positive reaction in the second group suggested that myrrh may be the putative allergen in a large proportion of such patients.

#### ***Significance: the use of western medical technique to improve traditional Chinese medicine***

It is commonly thought that Western and traditional Chinese medicine are two incompatible systems. The above studies demonstrated that a western dermatological investigative method, the patch test, was applicable to traditional medicine in confirming the cause of contact dermatitis from a Chinese herbal preparation and in identifying the causative ingredient. Such knowledge is very useful for the improvement of the preparation. The patch test can be used to test the effects of different concentrations of an irritant so as to obtain the concentration level that can be safely used. By reducing the concentration of the irritant, by removing it or by substituting it with an alternative non-irritant substance, contact dermatitis due to such preparation can be prevented.

## PREVENTION OF CONTACT DERMATITIS DUE TO TRADITIONAL CHINESE MEDICINE

Contrary to the common belief that traditional Chinese medicine is usually mild, safe and does not cause any side effect, our case reports clearly showed that traditional Chinese medicine can cause contact dermatitis. The main obstacle to further investigation and identification of the putative allergens or irritants is that the formulae of many herbal preparations are held in high secrecy. In Hong Kong, according to Regulation 36 of the Pharmacy and Poisons Regulation, Hong Kong Ordinance, all pharmaceutical products must be registered with the Pharmacy and Poison Board and have their detailed formulae listed before they can be distributed and sold. However, proper labeling and use of traditional Chinese medicine are not subjected to any control by law because of the proclamations in 1841, which declared that "inhabitants of Hong Kong would be governed according to the laws, customs and usage of the Chinese." Nothing in the above Regulation shall apply to the sale, manufacture, dispensing or compound of traditional Chinese medicine as listed in the "Chinese Herbal Materia Medica (本草綱目) or which are made from herbs customarily used by the Chinese people." It is perhaps time to re-examine these principles. Should there be two different standards for Western and traditional Chinese medicine? Should the patient's safety have lower priority than traditions, which may be out-dated and potentially dangerous?

We would like to suggest the following measures to prevent contact dermatitis due to traditional Chinese medicine:

a) **Compulsory labeling of components in all proprietary preparation:** Our experience is that most bone-setters and Chinese herbal medicine manufacturers are unwilling to disclose their formulae unless this is made mandatory. It is therefore suggested that all proprietary traditional Chinese medicine must have their detailed formulae listed before they are allowed to be distributed and sold. Full ingredient labeling is necessary for early identification of allergens and irritants. This can also provide consumers who are allergic to certain herbs with the necessary information so that they will use the products

without the risk of dermatitis.

- b) **Compulsory listing of side effects:** For the same reason, we would like to suggest that all proprietary herbal preparations should have their major, known side effects listed in the information pamphlets so that patients are warned of the possible danger and can take appropriate precautions.
- c) **The distribution and sale of very potent irritants or allergens** should be forbidden.
- d) **The prescription and sale of Chinese medicine that are potentially dangerous** should be limited to well-trained Chinese medical practitioners and herb dispensers.
- e) **Health education:** It is important to alert the general public to the possibility of developing contact dermatitis after topical application of herbal medicine (for example, bone-setter's herbs) so that early recognition and treatment can be achieved. Health education may be in the form of television programs, radio-broadcasting, public lectures and newspaper articles.
- f) **Further research:** Knowledge of contact dermatitis due to herbal medicine is still very scanty and fragmented. A systemic study on commonly used traditional Chinese medicine is needed if contact dermatitis resulting from its use is to be reduced. It is suggested that dermatologists in this region should work towards establishing a data bank or registry for contact dermatitis due to traditional Chinese medicine.
- g) **Liaison with China and overseas:** Establishing or maintaining contacts with places like Taiwan, Mainland China and Singapore, where Chinese herbal medicine are commonly used and sharing experience and information would be mutually beneficial.

## CONCLUSION

Contact dermatitis due to traditional Chinese medicine is a common problem in Hong Kong and is one of the few diseases that can be prevented if appropriate measures are taken. It is hoped that this paper would stimulate more colleagues to investigate further into this field and to promote better cooperation between western doctors (dermatologists) and traditional Chinese medicine practitioners in research and prevention of disease.

**Learning points:**

*Contact dermatitis due to topical application of traditional Chinese medicine is a common problem in Hong Kong. Compulsory labeling of components in all proprietary preparations is important for identification of possible allergens or irritants.*

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**Answers to Dermato-venereological Quiz on page 89****Answer (Question 1)**

1. Examination revealed numerous pustules arranged in an arc and annular pattern over erythematous patches. Differential diagnoses include subcorneal pustular dermatosis, pustular psoriasis, impetigo and pustular drug reaction. Subcorneal pustular dermatosis is relatively asymptomatic.
2. Subcorneal pustular dermatosis.
3. Dapsone is the treatment of choice. Etretnate and PUVA are alternative treatment. Subcorneal pustular dermatosis has also been reported to be associated with myeloma, leukaemia, inflammatory bowel disease, pyoderma gangrenosum, rheumatic arthritis and Ig A gammopathy. Hence it is also important to rule out such underlying conditions.

**Answer (Question 2)**

1. The clinical photo shows dark grey pigmentation over elbow. The diagnosis is fixed drug eruption.
2. Drugs associated with fixed drug eruption are tetracyclines, sulphonamides, barbiturates, salicylates, NSAIDs and phenolphthalein.
3. The eruption occurs at the same site with rechallenge to the same drug. The rash consists of initially round erythematous plaque that is followed by postinflammatory hyperpigmentation. With first exposure, lesion occurs within one to two weeks. With subsequent exposure, reactivation occurs within a few days.