

***Piper betle* L. inflorescence causes allergic contact dermatitis of the hands during betel quid assembly**

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Betel quid chewing is a very common habit among people living in the western Pacific basin and South Asia (1, 2). It has been estimated that nearly 600 million people chew betel quid, and among them 200 million chew it regularly (3), its consumption ranking after cigarettes, alcohol, and coffee (4). In Taiwan, nearly 2.5 million of 21 million inhabitants chew betel quid (5) with 70 000 retail stands selling betel quid (6) and 20 000 registered betel quid assemblers in the country. However, because of the low skill requirements, the actual number of betel quid assemblers is believed to be considerably greater.

The betel quid is made from areca nut, *Piper betle* L. leaves, *P. betle* L. inflorescence, and slaked lime (calcium hydroxide). The fibrous coat of the areca nut is trimmed using a special knife, and the nut and *P. betle* L. leaves are washed. 1 of 2 different procedures may then be followed depending on the type of the product to be produced. (i) The assemblers cut the nut down the middle but leaving the two halves just attached at the bottom. The inside of the nut is then pasted with lime (artificially coloured

red), and *P. betle* L. inflorescence is inserted to finish. (ii) Alternatively, *P. betle* L. leaf is pasted with white lime, rolled, and then a nut is inserted into the rolled-up leaf. During whichever process, the betel quid assemblers are significantly exposed to areca nut, *P. betle* L. leaves, red and/or white lime, *P. betle* L. inflorescence, and detergents.

It is common for betel quid assemblers to have hand dermatitis, most of which is irritant caused by the alkaline slaked lime. A case of allergic hand contact dermatitis because of *P. betle* L. inflorescence in a betel quid assembler is presented.

Case Report

A 26-year-old female betel quid assembler presented with a 1-year history of hand dermatitis in which there were erythematous maculopapules and scaling over the dorsal surface of her hands, thumb, index, and middle fingers (Fig. 1). She was not atopic. Patch tests to the European baseline series [(Chemotechnique Diagnostics, Malmö, Sweden), Finn[®] Chambers (Epitest Ltd, Helsinki, Finland), 2 days occlusion] and the materials used in betel quid assembly, including betel nut, red lime, white lime, and *P. betle* L. inflorescence and leaves were applied once her symptoms had subsided. The sites were examined at 2 and 3 days by the same dermatologist. The only reaction was to *P. betle* L. inflorescence, showing signs of infiltration and papules on both readings (Fig. 2). As controls, 50 betel quid non-exposed individuals were tested with *P. betle* L. inflorescence with entirely negative results. Therefore, we concluded that this is a case of allergic hand contact dermatitis caused by *P. betle* L. inflorescence in betel quid assembly.

Discussion

Most of the previous studies related to betel quid have focused only on the more general health effects of betel quid chewing. Betel quid chewing can produce psychoactive and cholinergic effects (7) and has been associated with submucous fibrosis (8, 9), leukoplakia, oral lichen planus (10), and angular cheilitis (11). It is a carcinogen (12, 13) and has caused oral cancer (14), oropharyngeal cancer (15), oesophageal cancer (16), and hepatoma (17). The use of *P. betle* L.



Fig. 1. Erythematous maculopapules with scaling over the dorsa surfaces of both the hand and fingers, especially over the thumb, index, and middle fingers. Black staining, hyperkeratosis, and scaling over the tip of the thumb on the right (dominant) hand.

leaves (Piperaceae) to lighten melasma may produce leukomelanosis, which manifests as confetti-like skin depigmentation (18). The Food and Drug Administration and many organizations have tried to dissuade people from chewing betel quid, but they have not yet been successful (19).

The typical cutaneous stigma in betel quid assemblers is a blackish stain over the dominant hand's first 3 fingers because of betel nut contact. This is the same stain that betel quid chewers develop on their teeth (20, 21).

Many betel quid assemblers suffer from hand contact dermatitis, usually because of the alkalinity of the lime (calcium hydroxide).

We report here for the first time, a case involving a betel quid assembler with allergic hand contact dermatitis caused by *P. betle* L. inflorescence. *P. betle* L. inflorescence contains safrole, hydroxychavicol, eugenol, methyl eugenol, isoeugenol, flavone, quercetin, etc. (22) but the allergen responsible for the contact allergy in this case is unknown. The

clinical manifestations of this case of allergic contact dermatitis to *P. betle* L. inflorescence was similar to that of betel quid assemblers with irritant hand dermatitis.

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Fig. 2. Patch test at the 3-day reading showing signs of infiltration and papules at the *P. betle* L. inflorescence area but not with the other test materials.

- betel quid chewing area. *J Oral Pathol Med* 2002; 31: 213–219.
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