Prevalence of propolis allergy in Singapore

To the Editor: Propolis is a mixture of resins, waxes (including beeswax), pollen, and organic debris produced by honeybees to repair their hives. It is used in personal care products and cosmetics for its antiseptic and anti-inflammatory properties and is increasingly recognized as an important allergen. We sought to determine the prevalence of propolis allergy in a cohort of patients.

All patients who attended the contact dermatitis clinic at Changi General Hospital, Singapore, between January 2009 and February 2013 and who reacted to propolis 10% in petrolatum were identified. Demographic and clinical information was retrospectively reviewed. Patch tests were performed with allergens from Chemotechnique Diagnostics (Vellinge, Sweden) and applied to the back with IQ Ultra chambers (Chemotechnique Diagnostics). Propolis 10% in petrolatum is routinely included in our local standard series. Patches were removed at 48 hours, with readings taken at 72 hours by 2 dermatologists with special interest in contact allergy. Reactions were measured as irritant, doubtful, weak positive, strong positive, or extreme positive according to International Contact Dermatitis Research Group recommendations. Weak positive, strong positive, and extreme positive reactions were analyzed and classified into current relevance, past relevance, doubtful relevance, or cross-reactions.

Eleven of 216 patients reacted to propolis in our department from January 2009 to February 2013, giving a prevalence of 5.1%. Eight were female patients and 3 were male patients (Table I). Median age was 48 years (range 14-59 years). There were 10 weak-positive reactions (90.9%) and 1 strong positive one (9.1%).

Patients 3 and 11 had positive reactions of current relevance because they used lip products containing beeswax and subsequently developed lip dermatitis. We were unable to patch test these patients to beeswax or perform liquid chromatography studies on the suspected products because of lack of access in our clinic. Propolis has been reported to be a possible contaminant of beeswax. Patients 2 and 6 had weakly positive reactions that were cross-reactions to *Myroxylon perierae*, given concomitant relevant reactions to *M perierae*. Patients 4 and 5 had cross-reacted to colophony, given concomitant relevant reactions to colophony. Patients 1 and 7 to 10 had weakly positive reactions to propolis that were of doubtful relevance because they denied previous use of products containing propolis or beeswax.

The prevalence of positive reactions to propolis in this study appears comparable to prevalence rates reported in studies performed in other countries. Sensitization rates range from 1.4% in Finland to 15.8% in Poland. Concomitant reactions to *M perierae*, fragrance, and colophony are known to occur because of cross-reactivity with cinnamic derivatives in *M perierae*, or pseudo–cross-reactivity because of common allergens in *M perierae*, fragrance, and colophony. A total of 45.5% of our patients in this series did not have concomitant reactions to *M perierae*, fragrance, and colophony, suggesting the importance of propolis as an allergen in its own right. Traditional medicines are commonly used in our society for health promotion or treatment of minor ailments. Patients may not recall this common practice, or are unaware of the composition of traditional medicines, which may account for the high rates of positive reactions with doubtful relevance observed in this study.

Further studies are warranted to understand contributory factors for propolis allergy in Singapore, given its importance as an allergen locally, including exposure in traditional medicines.

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| Patient | Sex | Age, years | Occupation           | Suspected contactants            | Affected sites | Series tested | Reaction to propolis | Relevance | Myroxolon pereireae positive | Colophony positive | Fragrance mix positive |
|---------|-----|------------|----------------------|-------------------------------|----------------|---------------|----------------------|-----------|---------------------------|------------------|--------------------------|
| 1       | F   | 55         | Part-time tutor      | Detergents                    | Hands, feet     | Standard, cosmetic | +                    | Doubtful | No                        | No               | No                       |
| 2       | M   | 49         | Power grid technician | Rubber cable insulation, washing liquids | Arms, hands | Standard, cosmetic | +                    | Cross-reaction to MP | +++      | +                        | Fragrance mix 8%, +  |
| 3       | F   | 59         | Teacher              | Lipstick (contains beeswax)   | Lips, perioral  | Standard, cosmetic | +                    | Current | No                        | No               | No                       |
| 4       | M   | 19         | Military service     | Rubber shoes                  | Feet            | Standard, shoe  | +                    | Cross-reaction to colophony | +        | +                        | Fragrance mix 8%, +  |
| 5       | F   | 58         | Not explored         | Rubber slippers               | Feet            | Standard, shoe, own products | +                    | Cross-reaction to colophony | +        | +                        | Fragrance mix 8%, +  |
| 6       | F   | 48         | Security guard       | Hair dye, gentamycin cream    | Face, hands     | Standard, hairdressing | +                    | Cross-reaction to MP | +        | No                       | Fragrance mix 8%, +++ |
| 7       | F   | 41         | Not explored         | Rubber, steroids, tetracycline ointment | Hands, feet | Standard, cosmetic | +                    | Doubtful | No                        | No               | No                       |
| 8       | M   | 22         | Military service     | Rubber helmet                 | Neck            | Standard         | +                    | Doubtful | No                        | No               | No                       |
| 9       | F   | 45         | Warehouse worker     | Rubber on badminton racquet   | Hands           | Standard         | +                    | Doubtful | No                        | No               | No                       |
| 10      | F   | 52         | Housewife            | Steroids                      | Legs            | Standard, cosmetic, corticosteroids | +                    | Doubtful | No                        | No               | Fragrance mix 8%, ?+   |
| 11      | F   | 14         | Student              | Lip conditioner               | Perioral        | Standard, own products | ++                   | Current | +++                       | No               | Fragrance mix 8%, ++   |

F, Female patient; M, male patient; MP, *Myroxylon pereireae*; ?, doubtful; +, weak positive; ++, strong positive; ++++, extreme positive.
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