

## RESEARCH LETTER

**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.<sup>1</sup> It is used in personal care products and cosmetics for its antiseptic and anti-inflammatory properties and is increasingly recognized as an important allergen.<sup>1</sup> 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.<sup>2</sup> 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 1). 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.<sup>1</sup> Patients 2 and 6 had weakly positive reactions that were cross-reactions to *Myroxylon pereirae*, given concomitant relevant reactions to *M pereirae*. 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.<sup>3,4</sup> Concomitant reactions to *M pereirae*, fragrance, and colophony are known to occur because of cross-reactivity with cinnamic derivatives in *M pereirae*, or pseudo-cross-reactivity because of common allergens in *M pereirae*, fragrance, and colophony.<sup>1,5</sup> A total of 45.5% of our patients in this series did not have concomitant reactions to *M pereirae*, 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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**Table I.** Demographics and clinical information

Patient	Sex	Age, years	Occupation	Suspected contactants	Affected sites	Series tested	Reaction to propolis	Relevance	<i>Myroxylon pereirae</i> 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%, +++; fragrance mix 2, +
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%, ?+; fragrance mix 2, +
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 pereirae*; ?+, doubtful; +, weak positive; ++, strong positive; +++, extreme positive.

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