

Contact Allergy to Propolis and Beeswax Occurrence, Diagnostics and Chemistry

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Gunnar Nyman conducted his doctoral studies at the Institute of Clinical Sciences, Department of Dermatology and Venereology, University of Gothenburg, Sahlgrenska Academy, Gothenburg, Sweden. The defence took place on the 21st of October 2022. The opponent was Åke Svensson, Associate Professor, University of Lund, Chairman at the dissertation was Professor John Paoli, Dermatologi och venereologi, University of Göteborg. Principal supervisor was Lina Hagvall and co-supervisor was Amra Osmanovic. The thesis can be found at <https://gupea.ub.gu.se/handle/2077/71518>

Cosmetics, including biocosmetics and "natural" skin remedies are common causes of contact dermatitis. Two frequent ingredients in biocosmetics are beeswax and propolis, which are known causes of contact allergy. These ingredients share components with each other, and with plant-derived products and fragrances. The composition of propolis varies according to the plants growing in the vicinity of the beehive. How this variation influences the tendency of the propolis to cause contact allergy is not known.

The aim of this dissertation was to investigate contact allergy to beeswax and to propolis of different geographical origins. The method for demonstrating contact allergy is patch testing, a standardized provocation test.

We studied the frequency of contact allergy to beeswax and propolis in patients with cheilitis and facial dermatitis. Two studies regarding contact allergy to propolis of different geographical origins (from China, Lithuania, North America, and Sweden) were carried out. One included patients referred for patch testing in West Sweden, and the other included such patients in Denmark, Lithuania, and Spain. High frequencies of contact allergy to beeswax and propolis, were found. Small differences between the 4 types of propolis were demonstrated in each country. Propolis originating from China, and from Lithuania gave statistically higher frequencies of contact allergy than propolis from Sweden in the 4 countries together. High frequencies of concomitant positive patch test reactions between propolis, beeswax, and plant-related products and fragrances were found.

Beeswax and propolis should be considered as causes of contact allergy in patients with cheilitis and facial dermati-

tis. Patch testing with just one propolis preparation detected about half of the propolis-allergic patients. Contact allergy to propolis was so common that it should be considered for inclusion in regular patch testing.

LIST OF ORIGINAL PUBLICATION

- I. Nyman G, Tang M, Inerot A, Osmanovic A, Malmberg P, Hagvall L. Contact allergy to beeswax and propolis among patients with cheilitis or facial dermatitis. *Contact Dermatitis* 2019; 81: 110-116, <http://doi.org/10.1111/cod.13306>.
- II. Nyman G, Oldberg Wagner S, Prystupa-Chalkidis K, Ryberg K, Hagvall L. Contact allergy in Western Sweden to propolis of four different origins. *Acta Derm Venereol* 2020; 100: adv 00256, <http://doi.org/10.2340/00015555-3615>.
- III. Nyman G, Giménez-Arnau AM, Grigatiene J, Malinauskienė L, Paulen E, Hagvall L. Patch testing with propolis of different geographical origins in a baseline series. *Acta Derm Venereol* 2021; 101: adv00591, <http://doi.org/10.2340/actadv.v101.423>.



John Paoli, Sirkku Peltonen, Åke Svensson (opponent), Kjell Thorén, Amra Osmanovic, Gunnar Nyman (respondent) and Anneli Julander.