

Original Article



Biological Effects of Cloth Containing Specific Ore Powder in Patients with Pollen Allergy

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Abstract

Objective The custom-homebuilding company, Cosmic Garden Co. Ltd., located in Okayama City, Japan was established in 1997 and uses specific natural ore powder (SNOP) in wall materials and surveys customers in order to improve allergic symptoms.

Methods To investigate the biological effects of SNOP, patients with a pollen allergy were recruited to stay in a room surrounded by cloth containing SNOP (CCSNOP), and their symptoms and various biological parameters were compared with those of individuals staying in a room surrounded by control non-woven cloth (NWC). Each stay lasted 60 min. Before and immediately after the stay, a questionnaire regarding allergic symptoms, as well as POMS (Profile of Mood Status) and blood sampling, was performed. Post-stay minus pre-stay values were calculated and compared between CCSNOP and NWC groups.

Results Results indicated that some symptoms, such as nasal obstruction and lacrimation, improved, and POMS evaluation showed that patients were calmer following a stay in CCSNOP. Relative eosinophils, non-specific Ig E, epidermal growth factor, monocyte chemotactic protein-1, and tumor necrosis factor- α increased following a stay in CCSNOP.

Conclusion This ore powder improved allergic symptoms, and long-term monitoring involving 1 to 2 months may be necessary to fully explore the biological and physical effects of SNOP on allergic patients.

Key words: Specific Mineral; Cloth, Indoor air; Immunological effects; Pollen allergy

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INTRODUCTION

It is a recognized social problem that indoor air conditions in the home, office, and other buildings impair human health and cause

ailments such as sick building syndrome^[1-3]. In addition, it is known that certain allergic diseases, such as hypersensitivity pneumonitis, are caused by indoor antigens derived from fungus and trichosporon^[4-6], and that bronchial asthma is caused

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by house dust and other agents^[7-9]. On the basis of these facts, many custom-home builders have been trying to establish health-promoting indoor conditions. For example, we reported that negatively charged particle-dominant indoor air conditions enhance natural killer cell activity and result in a slight but significant elevation of serum epidermal growth factor (EGF)^[10-13]. This indoor air condition probably promotes immune stimulation, particularly against cancer cells and virus-infected cells^[10-13].

The Cosmic Garden Co. Ltd. is a custom-home building company located in Okayama City, Japan and was established in 1997. The characteristics of products and homes they manufacture include a modified '2x4' construction method for aseismic capacity, the avoidance of chemical substances and smells when possible, as well as well-sealed, super-insulated, durable housing. In addition to these capabilities, this company uses specific natural ore powder (SNOP) within wall material when constructing housing. This natural ore is shown in Figure 1A and is obtained near Aso-mountain, Kumamoto prefecture, Japan, and is known to release far-infrared rays. This home-construction

company uses SNOP on all of the products they sell. The impressions of customers include an improvement of allergic symptoms, such as pollen allergy (PA), bronchial asthma, and atopic dermatitis, as well as improved sleep. In particular, the office room of this company is also built with SNOP and many customers have stated that symptoms of PA, such as nasal discharge and lacrimation, are improved immediately after entering the office. However, this company has not explored the biological effects of SNOP.

To support future product development using cloth containing SNOP (CCSNOP), this company obtained the Kirameki Creation Fund from the Okayama Prefecture Industrial Promotion Foundation for the period of January to September, 2014. Hence, we tried to explore the biological effects of CCSNOP on symptoms in patients with PA during the period of this disease. In addition to this trial, the far-infrared spectral radiation characteristics of the ore were examined by a Fourier transform infrared spectrometer at 100 °C using a Spectrum Gx FT-IR device (PerkinElmer, Inc., Waltham, MA, USA).

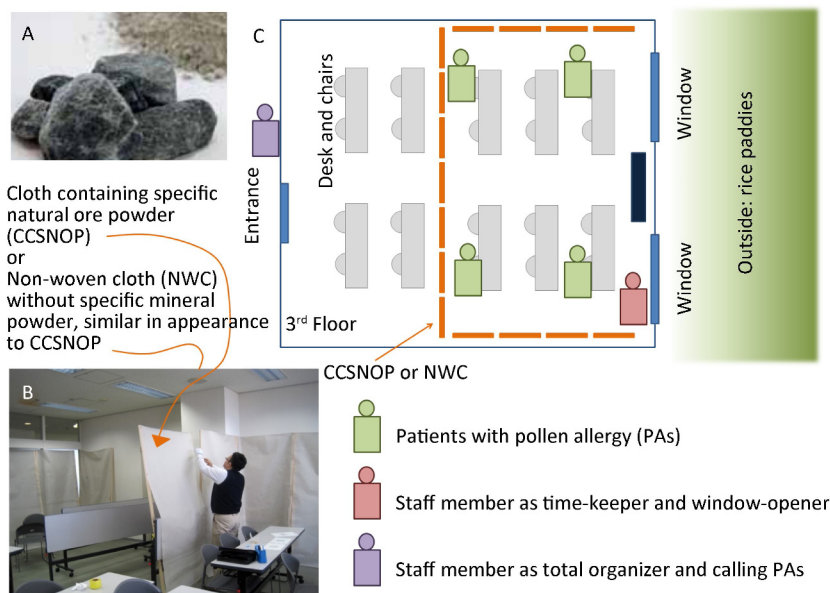


Figure 1. The experimental conditions. (A) The appearance of natural ore obtained near Aso-mountain located on Kyushu Island, Japan. (B) Arrangement of the cloth containing specific natural ore powder (CCSNOP) and non-woven cloth (NWC) in the experimental room before a stay involving patients with pollen allergies (PAs). (C) Schematic constitution of the experimental room. PAs sat on a chair surrounded by CCSNOP or NWC. A staff member who acted as time-keeper and window-opener was sitting in the corner of the room. Another staff member was the overall organizer and controlled the waiting PAs who were sitting outside the rooms.

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