

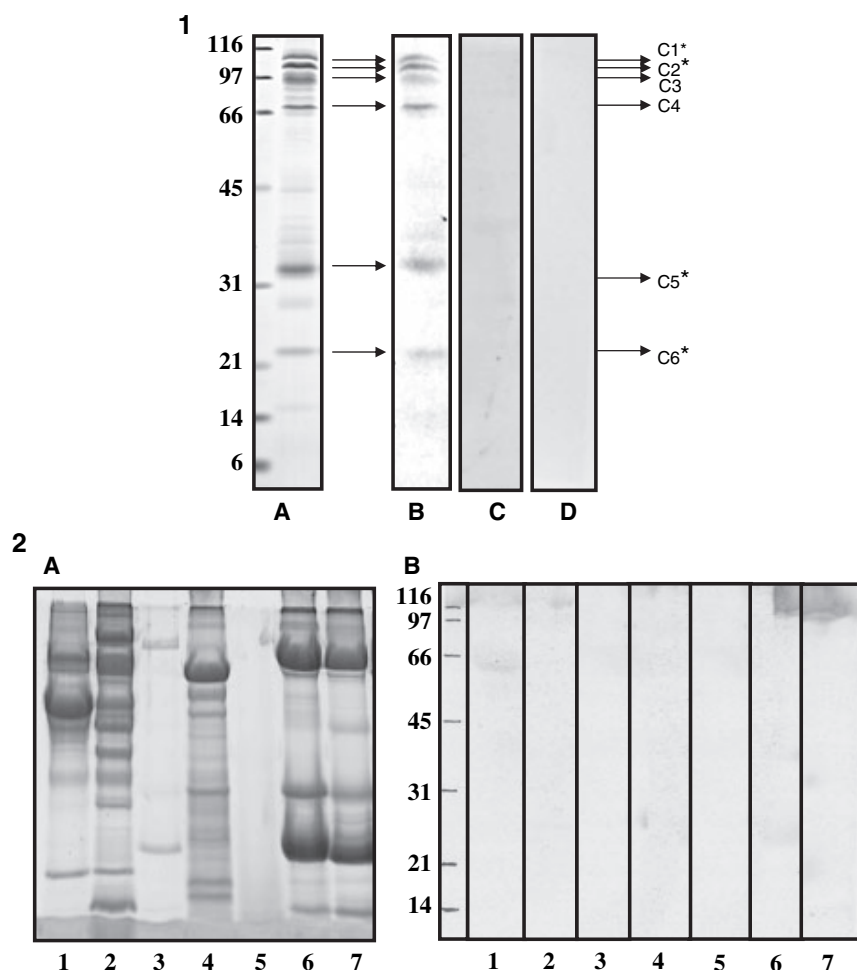


Figure 1. 1. Beluga caviar protein identification. (A) Coomassie staining of SDS-PAGE (14%) with Iranian Beluga caviar extract. (B) Immunoblot with patient's serum. (C) Immunoblot with control's serum. (D) Inhibition of IgE-binding after pre-incubation of patient serum with Beluga caviar extract (100 µg antigen/ml of patient serum). 2. (A) Coomassie staining of entire egg (1), egg yolk (2), caviars of salmon (3) and anchovy (4), lumpfish roe (5), trout roe (6) and salmon roe (7) extracts separated by SDS-PAGE (14%). (B) Western blot assay of 'false' caviars, fish roes and chicken egg extracts using patient serum and serum from a nonallergic control individual (data not shown).

The clinical history and the *in vitro* studies confirm that this patient has an IgE-mediated allergic reaction to Beluga caviar and that there is no cross-reactivity between Beluga caviar, other fish roes, 'false' caviars and chicken egg.

Vitellogenin has also been reported as an allergen in salmon roe (6), but to the best of our knowledge this is the first time that Hus h 1, name that we suggest for vitellogenin from Beluga caviar, is reported as a novel allergen.

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Salicylamide-induced anaphylaxis: increased urinary leukotriene E4 and prostaglandin D2 metabolite

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Key words: anaphylaxis; leukotrieneE4; mediators; prostaglandinD2; salicylamide.

Salicylamide is a commonly used NSAIDs and has been developed as nonprescription cold medicines in combination with aspirin and caffeine worldwide. Salicylamide is also used for preparation of pseudo-pharmaceutical prod-

This is the first report of salicylamide anaphylaxis demonstrating remarkable increase in urinary leukotriene E4 concentration.

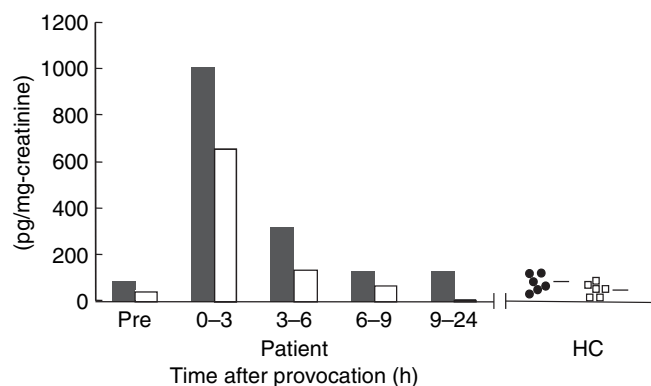


Figure 1. Marked increases in urinary concentrations of leukotriene E4 and 9 α ,11 β -PGF2 during challenge test. Urinary LTE4 and 9 α ,11 β -PGF2 are designated by black bar and white bar in the patient with anaphylaxis, respectively. Urinary LTE4 and 9 α ,11 β -PGF2 are designated by using closed circles and open squares in HC subjects, respectively. HC: healthy control subjects. Horizontal bars indicate median values.

ucts such as dyes, flavouring agents, and preservatives. Although salicylamide is used globally in various places, there has been no report of anaphylaxis induced by salicylamide.

In March 2006, an 18-year-old girl with anaphylaxis was referred to our hospital. The symptoms occurred about 10 min after ingestion of a granule-medicine for common cold (compound of acetaminophen, caffeine, promethazine methylenedisalicylate, and salicylamide). She had taken the same medicine several times in the past 2 years. When arriving at our hospital about 20 min after the onset of anaphylaxis, she presented with generalized urticaria, angioedema, lacrimation, abdominal pain, dyspnea, and throat tightness. After treatment, her clinical condition improved immediately.

Five months after the anaphylaxis, she underwent the detailed evaluation for the causative agent. She had no history of allergic diseases including drug allergy or anaphylaxis. Total IgE was 178 IU/ml. Spirometry was within normal limits. After informed consent was obtained, single-blind placebo-controlled oral challenge tests were performed. Because her medication history of NSAIDs was unknown, we performed challenge tests with acetaminophen, etodolac and aspirin, but no allergic reactions were observed. Then, we performed the test with the compound medication itself. After the test in which the cumulative salicylamide dose was 90 mg, urticaria, angioedema, lacrimation, and cough

were provoked. During the test, we collected spot urine samples to assay for LTE4 and PGD2 metabolite 9 α ,11 β -prostaglandinF2 (9 α ,11 β -PGF2). These mediators were measured as described previously (1, 2). Both mediators increased markedly after the onset. The maximum concentrations were noted during the collection period from 3 to 6 h (LTE4; 1012.8 pg/mg creatinine, a 12-fold increase from the baseline; 9 α ,11 β -PGF2; 657.5 pg/mg creatinine, a 15-fold increase from the baseline, Fig. 1). In addition, serum tryptase concentration markedly increased to 23.1 μ g/l 60 min after the onset. There was no change in urinary eosinophil-derived neurotoxin or LTB4 glucuronide concentrations during the course (3, 4) (data not shown). Four weeks later, we performed challenge tests using each component of the compound medication. Anaphylactic reaction was induced after ingestion of salicylamide but not of caffeine or promethazine methylenedisalicylate, confirming the diagnosis of salicylamide-induced anaphylaxis. Skin test and basophils histamine release test using salicylamide showed both negative results.

Salicylamide is the common name of *o*-hydroxybenzamide or amide of salicyl. Although salicylamide does not change to salicylate in the human body, previous reports suggest that salicylate may cross-react with aspirin in aspirin-intolerant asthma (5). Salicylamide is a low molec-

ular weight substance and can probably act as a hapten in conjugation with carrier proteins, which may explain the negative results of the histamine release test and skin test. Our present case suggests that repeated exposure to salicylamide can sensitize a patient, and that it can cause IgE-mediated anaphylaxis. We should realize that salicylamide, to which anyone may be exposed via foods, cosmetics, and commercial drugs, can be a potential allergen.

To our knowledge, this is the first report of anaphylaxis induced by salicylamide. Furthermore, we demonstrated the remarkable increase of urinary LTE4 and 9 α ,11 β -PGF2 during the anaphylactic reactions. The measurement of LTE4 and 9 α ,11 β -PGF2 concentrations in urine was useful for the diagnosis and monitoring of the clinical status. These results suggest that CysLT and PGD2 are the important mediators involved in the pathogenesis of anaphylaxis and these mediators overproduction might be associated with increased cyclooxygenase activity of mast cells. We aim to clarify the specific sites and cells of leukotrienes biosynthesis and to investigate the role of these substances in pathophysiology of anaphylaxis.

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Occupational asthma to ivy (*Hedera helix*)

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Key words: decorative flowers; green plants; *Hedera helix*; ivy; occupational asthma.

Occupational asthma (OA) associated with decorative plants is not rare (1, 2), and occupational (3) and nonoccupational (4) sensitization to green plants has also been reported. Common ivy, *Hedera helix* (family Araliaceae) is a climbing plant with beautiful evergreen leaves but humble flowers. It is a popular decorative green plant grown both outdoors and indoors. Unfortunately, ivy is known to cause contact dermatitis, with first reports dating from 1899 (5). There are also suggestions of an association between ivy and rhinitis symptoms (6). As far as we know, ivy-induced OA has not been reported

previously. In the present paper, such a case is presented.

The patient was a 40-year-old female who had worked in her own flower shop for the past 11 years. She was an ex-smoker having stopped smoking 3 years earlier and had no history of atopy. Symptoms of cough had started 4 years prior to the current examinations, appearing especially when she handled ivy. One year later she began to experience dyspnoea, and she was treated with inhaled steroids for a short time. She also had work-related skin symptoms, which were later diagnosed as nonimmunologic contact urticaria for narcissus and rose.

At the Finnish Institute of Occupational Health, respiratory and allergologic investigations were performed, as reported previously (1, 2), and the diagnosis of OA was made according to the European guidelines (7). The total serum IgE was 105 kU/l; radioallergosorbent test for ivy was not available. The skin prick tests (SPT) were performed to 18 common allergens as well as to storage mites. Sensitization to the following plants was studied with the prick-prick method (4): *Ficus benjamina* (leaf), *Dracaena fragrans* (leaf), *Asplenium nidus* (leaf), *Yucca aloifolia* (leaf), *Spathiphyllum wallisi* (leaf), *Euphorbia trigona* (stalk), rose (leaf), *Euphorbia pulcherrima* (green and red leaf), *Rumohra adiantiformis* (leaf), *Lilium orientalis* (pollen),

Hedera helix (leaf), *Hyacinthus orientalis* (leave, petal and bulb) and *Narcissus pseudonarcissus* (petal, leaf and stalk). All SPTs were negative. Spirometry showed normal ventilatory function, but in the histamine challenge test, strong bronchial hyperresponsiveness (BHR) was noted (PD₁₅ 0.08 mg). Peak expiratory flow (PEF) varied between 340 and 510 l/min during working days, with the lowest values occurring when handling green plants, especially ivy; during holidays PEF varied between 410 and 510 l/min. Bronchial asthma was diagnosed, and inhaled budesonide dipropionate started, after which BHR was mild (PD₁₅ 0.43 mg).

Specific bronchial challenge tests were performed in a 6 m³ challenge chamber, in which the patient cut and tore the flowers, stalks and leaves of the plants for 30 min. The forced expiratory volume in 1 s (FEV₁) and PEF values during the challenge test procedure were measured by a portable, pocket-size spirometer (One Flow; STI MEDICAL, Saint-Romans, France). The referent inhalation challenge test to lettuce leaves was negative. In the specific test, the handling of ivy caused an immediate asthmatic reaction, with 21% reduction in FEV₁ (Fig. 1) and with 20–30% reductions in PEF (not shown), with simultaneous subjective symptoms of dyspnoea. The PEF and FEV₁ values returned to normal after Atrodoal® (Boehringer Ingelheim

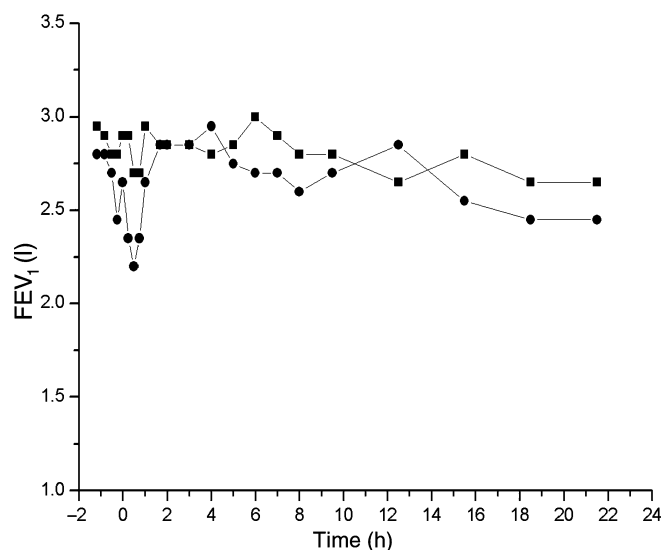


Figure 1. Forced expiratory volume in 1 s (FEV₁) follow-up during challenge tests: ■, placebo (lettuce); ●, ivy. Challenge ended at 0 h.