

Allergy to *Spathiphyllum wallisii*, an indoor allergen

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Spathiphyllum wallisii is an indoor ornamental house plant belonging to the Araceae family, with 36 known species of *Spathiphyllum* found in tropical areas [1-3]. These plants may contain alkaloids, crystals of calcium oxalate and proteolytic enzymes [3], with reported cases of contact dermatitis and occupational allergy such as rhinoconjunctivitis, asthma and urticaria after their exposure [1, 3-5]. Allergy to houseplants is rare [2-5]. We report a case of hypersensitivity to *Spathiphyllum wallisii*.

We describe a case of a 34-year-old Caucasian female with food allergy to lipid transfer proteins (LTP) and shellfish, rhinoconjunctivitis due to house dust mites, grass pollen, *platanus* pollen and cat dander hypersensitivity, currently well controlled owing to the specific immunotherapy to house dust mites she was receiving. In a routine visit, she suddenly referred immediate episodes of bronchospasm associated with severe rhinoconjunctivitis every time she got home. She related her symptoms to the spathe flower she was recently given.

Standard pneumoallergen prick-tests, including latex and Palm profilin (Leti Spain) were performed, prick-by-prick tests to the flower spikes from the *Spathiphyllum wallisii* she brought from home were carried out on the patient and on both atopic and

non-atopic controls. A basic pulmonary function test (spirometry), specific blood testing with ImmunoCAP® determinations of grass profilin (Phl p 12) and Pru p3 were conducted and, finally, an *in vitro* SDS-PAGE test and immunoassays of the flower's spikes, leaves and stem were taken about. Prick testing with the spathe flower was done as follows. A flower spike of *Spathiphyllum wallisii* was slightly crushed and put on the skin of the patient in a drop of physiological saline solution. A positive test result was defined with a wheal of at least 3 mm. The allergenic extract of the flower spikes, leaves and stem of *Spathiphyllum wallisii* were carried out with the sample donated by the patient. The samples were chopped and suspended in phosphate buffered saline. After homogenization for 2 hours at 4°C, the supernatants were centrifuged and separated. Next, they were dialyzed and lyophilized. Protein concentrations were measured according to the Bradford technique [6]. The proteins of the extracts were separated by SDS PAGE and then transferred to a membrane for further incubation with the patient's serum.

The flower prick-by-prick was positive with a wheal diameter of 3 mm after the first 15 minutes which doubled in size with an erythema diameter of 20 mm after 45 minutes, with both atopic and non-atopic negative controls. The natural rubber latex prick test was negative. Both the prick test for Palm profilin and the ImmunoCAP® determination result for grass profilin (Phl p 12) were also negative, the spirometry revealed a normal result (FEV1 >80%) and the patient's serum showed ImmunoCAP® positivity for Pru p3.

The *in vitro* immunoblot testing revealed several protein bands ranging between 11 and 14kDa, with a 13 kDa band in the allergenic extract of leaves, of greater intensity.

Occupational allergy caused by plants is well known in those patients continually exposed such as florists or gardeners [2, 4, 7], nevertheless, hypersensitivity to indoor ornamental houseplants is rarely reported. The yucca (*Yucca aloifolia*), ficus (*Ficus benjamina*) and the *Spathiphyllum* genus are the most studied indoor plants for this purpose, with high degree of cross-reactivity between them [1, 3]. There are a few cases of allergy to spathe flower described [1, 2, 4, 5], with one heavy band detected of about 14 kDa in IgE immunoblotting, not fully identified but with the same molecular mass identified in profilins [4]. Furthermore, proteins with a molecular weight ranging between 14 and 15 kDa have been recognized in a variety of vegetables and in rubber latex [1, 7-9], justifying the possible cross-reactivity between the mentioned plants.

Our patient was only tested for *Spathiphyllum wallisii* due to the clear cause-effect related to the patient's symptoms demonstrated after spathe flower exposure, absence of exposure to other indoor house plants and her explicit improvement after withdrawal of the plant. Latex prick test and Palm profilin prick test were negative as well as ImmunoCAP® determination of grass profilin. For that reason, the protein bands detected in our IgE immunoblotting of 11-14 kDa could be considered a sensitization to *Spathiphyllum wallisii* given the fact that we cannot ensure that profilin or a profilin with a low cross-reactivity pattern is the protein responsible for the hypersensitivity in this case, as it has been suggested in other cases.

It is important to consider ornamental houseplants that do not produce pollen as possible sources of indoor allergens, as it has been demonstrated, since other parts of these plants may cause immediate hypersensitivity, beyond commonly known molds, house dust mites and pet's hair or dander.

DECLARATIONS:

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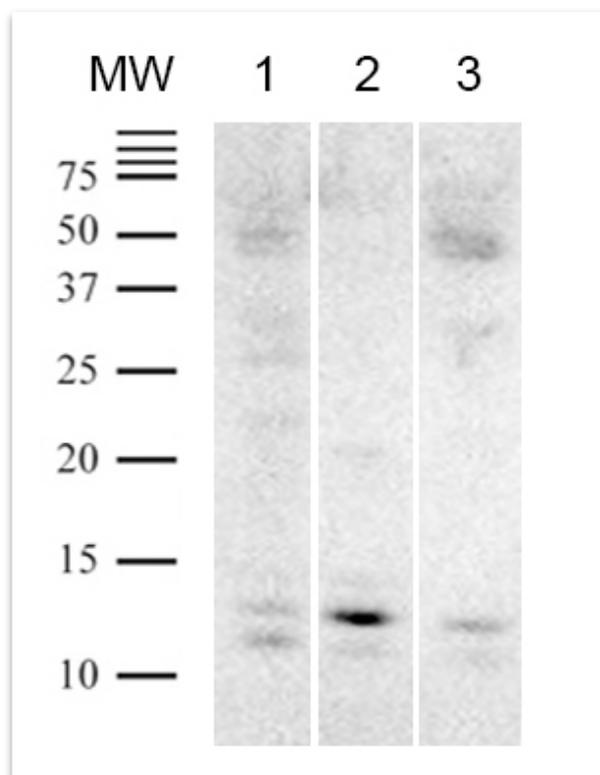


Figure 1. Immunoblot. (MW) Molecular weight (kDa); (1) Extract of flower spikes; (2) Extract of leaves; (3) Extract of stem. Several protein bands ranging between 11 and 14kDa can be seen, with a 13 kDa band in the allergenic extract of leaves, of greater intensity.