#1217 - Case report - No preference

How immunoblotting and mass spectrometry can help to diagnose kiwi fruit allergy.

Food allergy / Food allergy: diagnosis

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Case report

Introduction

Allergy to kiwi fruit is often associated with severe reactions in addition with oral allergy syndrome. Kiwi fruit matrix is very complex as it contains many allergenic proteins. We describe a clinical case of allergy to kiwi fruit (*Actinidia deliciosa*) in a woman presenting birch pollen allergy and recurrent urticaria.

Objectives

The diagnosis of kiwi fruit allergy is based on anamnesis, skin prick test (SPT) and specific IgE (sIgE) measurement to total kiwi fruit extract. Actually, the *in vitro* diagnostic tools cannot help the physician to define the precise kiwi allergen involved in the allergic reaction. Indeed, only one molecular allergen component is commercially available: Act d 8 (PR-10 protein, Birch Bet v 1-homologous). We aimed to adapt a 2D Western blot (WB) to get the molecular allergen sensitization profile of the patient. Afterwards, we used mass spectrometry (LC-MS/MS) to identify precisely the allergens.

Methods

We analyzed the serum of a 23 y.o. woman presenting a positive SPT to kiwi extract, low sIgE for kiwi extract (0.11kUA/L) and positive sIgE for Act d 8 (6.66 KUA/L). We extracted total *Actinidia deliciosa* proteins. Then, we separated proteins on the basis of their isoelectric point and molecular weight. The patient serum was analyzed by 2D WB in order to evaluate its sIgE reactivity against the different protein spots. Finally, the protein spots recognized by the patient sIgE were identified by LC-MS/MS.

Results

The patient sIgE sensitization profile showed 5 specific protein spots. Amongst them, we selected 2 spots and identified them by LC-MS/MS. The first spot situated around 25 kDa/pH5-6 was pointed out as Act d 1 (cystein protease). The second spot around 10 kDa/pH10 was identified as Act d 10 (LTP family). The result of sIgE against Act d 8 correlated perfectly with a third spot of 18 kDa/pH6-7.

Conclusion

We studied a birch pollen allergic woman presenting recurrent urticaria with low sIgE to kiwi extract but a positive SPT to kiwi. The 2D WB provided a sIgE profile showing multiple kiwi allergens. Amongst them, we confirmed Act d 8 which is associated with OAS in birch pollen allergic patients and identified Act d 1 and Act d 10, both frequently associated with severe reactions to food. We pointed out a potential role of Act d 1 and Act d 10 in the clinical symptoms of urticaria in this patient. Furthermore, we demonstrated superiority of 2D WB over the traditional diagnostic methods, unable to reach the same precision.