

## Food allergy due to *Ferula*

### Çaşır otu allerjisi

Mehmet ÜNSEL<sup>1</sup>, Ahmet ÇAKIR<sup>2</sup>, Yusuf KAYA<sup>3</sup>, F. Ömür ARDENİZ<sup>4</sup>

<sup>1</sup> **Unit of Allergy, Clinic of Internal Medicine, Izmir Tepecik Training and Research Hospital, Izmir, Turkey**  
SB Izmir Tepecik Eğitim ve Araştırma Hastanesi, İç Hastalıkları Kliniği, Allerji Ünitesi, Izmir, Türkiye

<sup>2</sup> **Department of Chemistry, Faculty of Arts and Sciences, Kilis 7 Aralık University, Kilis, Turkey**  
Kilis 7 Aralık Üniversitesi Fen-Edebiyat Fakültesi, Kimya Bölümü, Kilis, Türkiye

<sup>3</sup> **Department of Biology, Faculty of Science, Ataturk University, Erzurum, Turkey**  
Atatürk Üniversitesi Fen Fakültesi, Biyoloji Bölümü, Erzurum, Türkiye

<sup>4</sup> **Division of Allergy and Clinical Immunology, Department of Internal Medicine, Faculty of Medicine, Ege University, Izmir, Turkey**  
Ege Üniversitesi Tıp Fakültesi, İç Hastalıkları Anabilim Dalı, Allerji ve Klinik İmmünoloji Bilim Dalı, Izmir, Türkiye

#### ABSTRACT

The genus *Ferula* known as "Çaşır otu" in Turkey is belonging to Umbelliferae family and there are about 17 species of this genus in Turkish flora. The *Ferula* species such as *F. communis*, *F. orientalis*, *F. rigidula DC* are consumed as vegetable and also known as an aphrodisiac in the East Anatolia. So far, an allergic reaction stemming from *Ferula* consumption has not been reported. A 39 year-old male patient had been admitted to the emergency room due to itching of the scalp, asymmetrical swelling in the face, lip, tongue and shortness of breath developed in 30 minutes following consuming of *Ferula*. Prick-to-prick test with raw *Ferula* was found to be positive. Skin prick tests with *Ferula* extracts and grass, weed and tree pollens gave positive results. Herein, we firstly described a patient with food allergy due to *Ferula*.

(*Asthma Allergy Immunol* 2011;9:166-168)

**Key words:** *Ferula*, food allergy, pollen food syndrome

Received: 18/09/2011 • Accepted: 04/10/2011

#### ÖZET

Çaşır otu olarak bilinen *Ferula* Doğu Anadolu'da yetişen bir bitkidir. *F. communis*, *F. orientalis*, *F. rigidula DC* gibi yaklaşık 17 türü bulunmaktadır. Bölge halkı tarafından haşlanmış formda salata olarak tüketilmektedir ve peynir yapımında kullanılmaktadır. Ayrıca, afrodizyak özelliği ile de bilinmektedir. Günümüze kadar *Ferula* tüketiminden kaynaklanan allerjik reaksiyon bildirilmemiştir. Otuz dokuz yaşında erkek olgu salata olarak *Ferula* tüketiminden yaklaşık 30 dakika sonra saçlı deride kaşıntı, yüz, dil ve dudakta asimetrik şişlik ve nefes darlığı yakınmalarıyla acil servisimize başvurdu. Çiğ *Ferula* ile prick-to-prick testi ve *Ferula* ekstraktları, ot, yabancı ot, ağaç polenleri ile deri prik testi pozitif saptandı.

(*Asthma Allergy Immunol* 2011;9:166-168)

**Anahtar kelimeler:** Çaşır otu, gıda allerjisi, polen gıda sendromu

Geliş Tarihi: 18/09/2011 • Kabul Ediliş Tarihi: 04/10/2011

## INTRODUCTION

The genus *Ferula* known as “Çaşır otu” in Turkey is belonging to Umbelliferae family and there are about 17 species of this genus in Turkish flora. The *Ferula* species such as *F. communis*, *F. orientalis*, *F. rigidula* DC are consumed as vegetable and also known as an aphrodisiac in the East Anatolia<sup>[1]</sup>. So far, an allergic reaction stemming from *Ferula* consumption has not been reported in Turkey.

## CASE PRESENTATION

A 39 year-old male patient had been admitted to the emergency room due to itching of the scalp, asymmetrical swelling in the face, lip, tongue and shortness of breath developed in 30 minutes following consuming of boiled *Ferula* in June of 2008. His symptoms were taken under control by epinephrine injection. He did not experience such symptoms after elimination of *Ferula* from his diet. He also had seasonal allergic rhinoconjunctivitis began on May of 2008. He did not report an episode of urticaria or angioedema before. The physical examination and routine laboratory analysis associated with angioedema were normal.

## Analysis of the Plant

Plant was identified as *Ferula rigidula* DC (Figure 1) and voucher specimen has been deposited in the herbarium of Department of Biology, Faculty of Science, Ataturk University, Erzurum.



Figure 1. The picture of *Ferula* plant.

## Prick Test Material

As there is no commercial skin prick test (SPT) material, *Ferula* extracts were prepared to use in SPT. The stem of the plant was decomposed into three different organic dry extract.

Extraction Procedure: The stem was extracted with acetone (100 mL x 4) and the extract was concentrated under reduced temperature (40°C) and pressure using a rotary evaporator (extract-1, non-polar part). The stem was extracted with methanol (100 mL x 4) and the extract was concentrated under reduced temperature (50°C) and pressure using a rotary evaporator. Afterward, the residue was dissolved in 25 mL of distilled water (60°C) and extracted with *n*-hexane (3 x 50 mL) to remove lipophilic compounds. Then, this extract was lyophilized in a 10 µm-Hg pressure using a freeze-dryer (extract-2, polar part). Additionally, the stem was subjected to 50 mL of boiled distilled water and filtered over a Whatman paper. The water was lyophilized in a 10 µm-Hg pressure using a freeze-dryer (extract-3, polar part)<sup>[2]</sup>.

## Laboratory Evaluation

SPT with common aeroallergens (grass, weed and tree pollens, house dust mites, molds and animal dander) was performed (Allergopharma, Hamburg, Germany). Physiological saline was used as negative control and histamine (10 mg/mL) for positive control. SPT results were assessed after 20 minutes. Presence of an induration 3 mm or greater than the negative control accompanied by an erythema was considered positive. SPT with grass, weed and tree pollens gave positive results. The prick-to-prick test (PPT) was performed with stem of the raw and boiled *Ferula*. PPT with raw *Ferula* was found to be positive (Figure 2, Table 1). The *Ferula* extracts were used in SPT after diluting with physiologic saline. The extract 1 was not taken into account during the evaluation due to its non-polar nature. SPT employed by using extract 2 and extract 3 was found to be positive (Figure 3, Table 1). The SPT and PPT with *Ferula* and the extracts were found to be negative in 10 healthy individuals known to consume *Ferula*.

PPT and SPT were performed after provision of emergency facilities after obtaining the informed consent from him.



Figure 2. Skin prick-to-prick test with *Ferula* (Ç<sub>1</sub>: Raw *Ferula*, Ç<sub>2</sub>: Boiled *Ferula*, N: Negative control, H: Positive control).

	Skin prick test (mm)	Prick-to-prick test (mm)
Grasses		
Ryegrass	11	-
Meadow fescue	8	-
Timothy grass	10	-
Weeds		
Mugwort	7	-
Dandelion	20	-
English Plantain	12	-
Trees		
Birch	4	-
Raw <i>Ferula</i>	-	5
Boiled <i>Ferula</i>	-	0
<i>Ferula</i> extract 2	7	-
<i>Ferula</i> extract 3	6	-
Negative control	0	0
Positive control	5	5

## DISCUSSION

We firstly described a patient with food allergy due to *Ferula*. A remarkable endurance was determined by PPT and SPT with *Ferula* and *Ferula* extracts, respectively (Table 1). The oral provocation test was not performed due to severe allergic reaction history necessitating epinephrine use.

The food allergy beginning in the adulthood is not very common. In this period, cross-reactive allergens may be responsible for the development of food allergy as shown in latex-food or pollen-food syndromes including mugwort-celery-birch-



Figure 3. Skin prick test with *Ferula* extracts (ÇG<sub>1</sub>: Extract 1, ÇG<sub>2</sub>: Extract 2, ÇG<sub>3</sub>: Extract 3, N: Negative control, H: Positive control).

spice syndrome<sup>[3]</sup>. He had positive SPT to both mugwort and birch pollens. Celery is also a member of Umbelliferae family such as *Ferula*.

The beginning of his food allergy in the adulthood which was preceded by the seasonal allergic rhinitis symptoms, the presence of positive SPT to mugwort and birch and the fact that *Ferula* is also a member of Umbelliferae family like celery, all strongly suggest us *Ferula* allergy presented as pollen-food syndrome.

Since he never consumes celery, it is not known whether or not he has mugwort-celery-birch-spice syndrome.

## ACKNOWLEDGEMENT

We thank Dr. Zekai Halici for helping with the organization of the team performing the extraction and analysis of the plant.

## REFERENCES

1. Baytop T. *Therapy with Medicinal Plants in Turkey- Today and in Past*. Istanbul Univ. Press, Istanbul, Turkey 1999:176-7.
2. Unal EL, Mavi A, Kara AA, Cakir A, Sengul M, Yildirim M. Antimicrobial and antioxidant activities of some plants used as remedies in Turkish traditional medicine. *Pharmaceutical Biology* 2008;46:207-24.
3. Egger M, Mutschlechner S, Wopfner N, Gadermaier G, Briza P, Ferreira F. Pollen-food syndromes associated with weed pollinosis: an update from the molecular point of view. *Allergy* 2006;61:461-76.