

Occupational allergy caused by marigold (*Tagetes erecta*) flour inhalation

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Key words: Marigold flour; occupational allergy; poultry feed colorant; type I hypersensitivity.

Marigold flour is prepared from the flowers of

Tagetes erecta or the flowers of *Calendula officinalis*, plants belonging to the Asteraceae or Compositae family. It is used since ancient times (Romans used it as a

medicine) and it has been named: Marigold (in English) and 'Caléndula' or 'Maravillas' (in Spanish).

Active components include saponin, essential oils, flavonoids, carotenoids, mucilages, pigments, etc. Food additive industry has extensively used it as a poultry feed colourant to give more attractive colour to eggs and chicken meat, because of the abundance of pigments and carotenoids (1, 2) in its composition.

Cases of contact dermatitis related to marigold flour have been previously described, (3) but there are no reported cases suggesting the behaviour of Marigold flour as a causal agent of type I hypersensitivity.

We present the case of a 29-year-old man who has been working as a porter in an animal fodder factory for 6 years. He has been suffering from soft rhinitis for 2 years, since the day he started to carry marigold flour sacks. He presented

an important episode of rhinitis and asthma after the manipulation of marigold's flour sacks 15 days before his visit to our medical service. No atopy antecedents can be found in his family, although he suffered from pollinosis since he was a teenager.

In vivo study was performed by prick test to inhalants (positive to house dust mites, and pollens from *Artemisia vulgaris*, *Helianthus annuus*, *Taraxacum officinalis*, *Platanus acerifolia* and *Olea europaea*), foods (positive to strawberry, peach, pineapple, prawn and sunflower seeds), cereal flours [positive to barley, corn, rice and grass pea (*Lathyrus*

sativus), marigold flour (Bial Aristegui; 20 mg/ml). Nasal challenge test was positive to marigold flour (2 mg/ml) and to *A. vulgaris* pollen (0.2 mg/ml) (eight negative controls was made with negative results). Baseline spirometry and bronchodilator test were normal.

In vitro study was performed including measurements of serum total IgE (178 kU/l) and serum specific IgE by Enzyme Allergo Sorbent (EAST) or CAP system (Pharmacia, Uppsala, Sweden) to extracts from marigold flour: 7.7 kU/l; *A. vulgaris* pollen: 6 kU/l, *H. annuus* pollen: 7.5 kU/l, olive pollen: 2.2 kU/l, prawn: 0.81 kU/l, peach: 5.03 kU/l,

Marigold flour has been extensively used by the food additive industry as a poultry feed colourant to give more attractive colour to eggs and chicken meat.

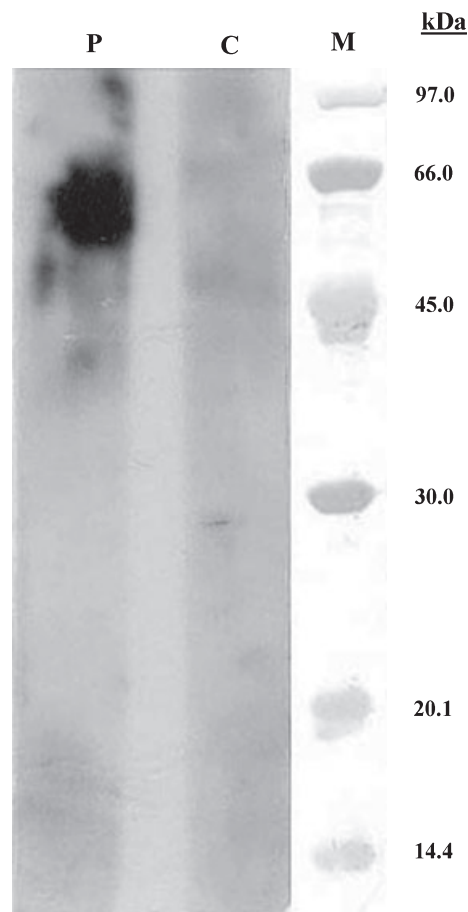


Figure 1. SDS-PAGE Immunoblotting with marigold flour extract. Lane P: patient serum; Lane C: control serum (pool of sera from nonatopic subject); Lane M: molecular mass marker.

strawberry: 3.05 kU/l and pineapple: 0.87 kU/l.

SDS-PAGE Immunoblotting with marigold flour extract revealed an IgE-binding band of 60 kDa (Fig. 1). Cross reactivity between *H. annuus* pollen extract and marigold flour extract was demonstrated by EAST-inhibition assay.

This is the first reported case of IgE-mediated occupational allergy to marigold flour. It was demonstrated by prick test, nasal challenge test and specific IgE determination. A 60 kDa – IgE binding band has been observed by Immunoblotting.

The EAST-inhibition results showed the existence of cross reactivity between extracts from marigold flour and *H. annuus* pollen suggesting the influence

of his pollen allergy in the development of the marigold flour allergy symptomatology.

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