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Immediate urticaria to Euphorbiaceae

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• VARIOUS allergic disorders, ascribable exclusively to the *Hevea* genus, have long been described in relation to the *Euphorbiaceae* family. The *Hevea* genus is used in the extraction of latex, which is an important raw material in various products in daily use, such as gloves for housework, rubber for erasers, adhesive tape, and stickers; sports articles (balls, sailing accessories, and underwater masks); and medical and paramedical tools (surgical gloves, catheters, adhesive plasters, and dummies).

This natural latex induces IgE-mediated disorders that are moderately distressing, although in a few categories of workers the percentage of sensitization may be rather high, causing disorders of the respiratory tract with attacks of asthma and anaphylactic shock (1–3).

During a botany tutorial session on autochthonous flora, a few university students taking biological sciences (more precisely, seven students from the third year) developed severe immediate urticaria-type itchy allergy, at the site of contact, although the itch was also generalized in three cases of urticaria angioedema syndrome, after gathering a few specimens of *Euphorbia characias* L. No symptoms involving the airways were observed, because the latex was too dense to spread in the atmosphere.

E. characias L. is a plant of the Euphorbiaceae family that grows wild in Portugal and in the Mediterranean basin in dense monospecific populations at the edges of holm oak woods or secondary maquis, in heathland and pastures.

The plant has upright, pubescent stems that are bare in the lower parts and 6–12 cm tall. The lower leaves are

reflex, while the upper ones are upright, linear, and lance-shaped, often with revolute margins. The flowers form umbels of 20–22 radii, and have greenish, trapezoidal glands. When crushed, all parts of the plant emit a dense, white, particularly irritant latex that is often released into streams to poison the water and collect the fish.

Contact of this latex with the mucosa of the nose, mouth, and eyes causes severe irritation, although it never progresses to the most dangerous forms. Contact with the epidermis, however, does not cause any disorder.

Because of its particular hardness and climatic and environmental resistance, *E. characias* L. has been genetically improved through hybridization, in order to obtain particularly suitable strains that can be grown in gardens, in spite of their dangerous latex (4).

Previous studies have shown the presence of diterpenoids of the lathyrane and jatrophane types in *Euphorbias* (5, 6). These compounds,

however, were not active in irritancy tests.

The material collected in Sardinia and analyzed by us, on the other hand, contained diterpenoids unrelated to the ones previously found in this species (atisane, abietabes).

However, phorbol and ingenol derivatives, which are the most typical irritant compounds of spurge, could not be detected. We recently found diamine oxidase and peroxidase activity in the latex of *E. characias* samples collected in Sardinia (7, 8).

In other recent studies on *Hevea brasiliensis* Müller Arg., it was pointed out that allergic manifestations related to IgE-mediated sensitization are caused by the protein antigens of natural latex (9), whose most important allergens seem to be rubber elongation factor (10) and prohevein (11).

Therefore, the irritant action might be caused by the protein component in *Euphorbia* latex, particularly by diaminoxidase. This enzyme oxidizes putrescine and cadaverine at a fairly high rate and, although less efficiently, a few other related compounds, but not histamine, spermine, or spermidine.

The subjects with clinical manifestations of urticaria underwent a careful anamnesis that showed that they had been exposed to *Euphorbia* latex. They underwent prick tests, and their serum was found to be positive for specific IgE.

It is clear that subjects exposed to this plant either for professional reasons or by accidental contact, should be protected by pharmacologic prevention with antihistamines and barrier creams to be applied on the hands every 2 h, especially those who are exposed to *E. characias* and other latex-containing members of the *Euphorbiaceae* family for work and/or study.

In fact, it is likely that similar species may cause dangerous irritant clinical manifestations in predisposed and sensitized subjects.

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