



Genital allergic contact dermatitis in response to contact to thyme in a sanitary pad

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KEYWORDS: allergic contact dermatitis, case report, patch test, sanitary pad, thyme

Nowadays many daily consumer products such as toilet paper, paper handkerchiefs, sanitary pads, and cleansing gels are treated and flavored with disinfectants and essences to increase their sterility and pleasantness. Considering the daily repeated use of such products, irritant and allergic contact dermatitis can occur, in particular if predisposing factors are present.

CASE REPORT

A not-atopic 42-year-old female patient came to our attention for the onset of diffuse eczematous lesions involving the genital area and spreading to the lower limbs and the upper part of the trunk. History revealed that such lesions started to appear during the last menstrual period and with the use of a specific sanitary pad (Saugella cotton touch) that she had been using for a couple of months. The sanitary pads were characterized by the presence of a microencapsulated solution of *Thymus vulgaris* essential oil that gradually released its ingredients following the contact with the skin. When investigated further, she reported different episodes of allergic contact dermatitis (ACD) in the past: contact dermatitis to shoes caused by rubber and *p*-tert-butylphenol formaldehyde resin, and occupational ACD to fragrances affecting her hands, being a perfumer. The patient denied any previous similar skin diseases in the past.

After the complete resolution of the dermatitis, achieved thanks to systemic antihistamine therapy (levocetirizine 5 mg once daily) and a daily application of mometasone furoate for 10 days, we performed patch tests with the S.I.D.A.P.A. (Italian Society of Allergological, Occupational and Environmental Dermatology) baseline series (Euromedical, Calolziocorte, Italy) and with a wetted piece of the sanitary pad. Patch tests were applied on the back and left in occlusion for 2 days with Al Test (Euromedical) on Scanpor Tape (Norgesplaster, Vennesla, Norway). Readings were performed at day (D)2, D4, and D7¹ and showed positive reactions to *p*-tert-butylphenol formaldehyde resin, *Myroxylon per-eira*, fragrance mix I, mercaptobenzotiazole, mercapto mix, and to the

sanitary pad. Subsequently, patch tests were performed also with all the components of the sanitary pad showing a positive results to the raw and dried leaves of thyme. In addition, patch tests were performed with rosemary raw leaves, which turned out to be negative. Twenty healthy subjects were patch tested with the raw and dried leaves of thyme, with negative results.

DISCUSSION

We report the case of a 42-year-old woman who developed an ACD to a sanitary pad. These products have been described as a culprit of ACD owing to the presence of different ingredients such as colophonium, methacrylates, formaldehyde, and fragrances.^{2,3} In our case, ACD was caused by thyme.

Thyme (*Thymus vulgaris* L) is an evergreen shrub belonging to the Labiatae family, which includes many aromatic herbs such as rosemary (*Rosmarinus officinalis*), organum (*Origanum vulgais*), peppermint (*Mentha piperita*), lavender (*Lavandula officinalis*), hyssop (*Hysoppus officinalis*), marjoram (*Origanum majoran*), sage (*Salvia officinalis*), and basil (*Ocinum basilicum*).⁴ Thyme is commonly used as a spice in foods and as an essence in perfumes, but it also has a role in industry to suppress offensive odors in fluids or oils. Furthermore, its essential oil is commonly added to common consumer products and used in homeopathic medicine for its antimicrobial, antiviral, and antimycotic activity.⁵ The sensitizing properties of thyme have mainly been demonstrated in occupational cases⁶ or homeopathic medicine.⁴ Thyme is also able to induce occupational asthma with a true IgE-mediated pathomechanism in food industry workers⁷ and anaphylactic reaction have occurred after its ingestion in sensitized patients.⁸

In a recent chromatographic study, the analysis of thyme essential oil identified 24 different compounds, including furan, alpha-pinene, beta-myrcene, terpinen-4-ol, alpha-terpinene, gamma-terpinene, humulene, and so on, although the main constituents were thymol and its derivatives.⁹ Among these, terpinen-4-ol and alpha terpinene

are well-known sensitizers.^{9,10} In our case, we may speculate that the wetness, the occlusion, and the close contact of the sanitary pad to the skin of the genital area played a role as a predisposing factor to the onset of the ACD. By literature review, we found that some authors described a cross-reactivity between thyme and other plants belonging to the Labiatae family, in particular rosemary.^{4,8} We also performed patch tests with rosemary but these turned out negative. Yet, a cross-reactivity between thyme and fragrances is commonly described, as confirmed by our results.¹¹ In view of the widespread use of thyme in several products, physicians must be aware of its sensitizing potential even if further studies are required to identify the culprit allergen. To our knowledge, this is the first case in which the regular use of a thyme-impregnated sanitary pad led to an unusual localization of ACD caused by a culinary spice.

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How to cite this article: Romita P, Foti C, Gullo G, Ambrogio F, Dimauro D, Calogiuri G. Genital allergic contact dermatitis in response to contact to thyme in a sanitary pad. *Contact Dermatitis*. 2020;82:169–170. <https://doi.org/10.1111/cod.13413>