

## CONTACT POINT

# Allergic reaction to 3 tattoo inks containing Pigment Yellow 65

Iris González-Villanueva  | Pedro Álvarez-Chinchilla | Juan F. Silvestre

Cutaneous Allergy Unit, Department of Dermatology, Hospital General Universitario de Alicante, Alicante, Spain

**Correspondence**

Iris González Villanueva, Department of Dermatology, Hospital General Universitario de Alicante, c/ Pintor Baeza s/n, CP, 03010, Alicante, Spain.

Email: jolairis@gmail.com

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Multi-coloured tattoos are popular worldwide, but may produce allergic reactions, usually caused by a single colour. There are no reported cases of hypersensitivity reactions to different inks (colours) in the same tattoo. We report a patient in whom all 3 inks causing an allergic reaction contained Pigment Yellow 65 (CI 11740).

## CASE REPORT

A 19-year-old woman had been tattooed 3 months before presenting. She had a tattoo on the dorsum of her right foot, where an eczematous and ulcerative plaque had arisen a few weeks after tattooing. The reaction affected all areas of the tattoo injected with yellow, red and green ink, and was absent in the areas tattooed with black ink (Figure 1). A skin biopsy showed a thickened

epidermis with hyperkeratosis, small pigment deposits, and a band-like dense infiltrate in the superficial dermis with numerous eosinophils. We performed patch testing with the Spanish baseline series, a metals series, and a textile colours and finish series (Chemotechnique Diagnostics, Vellinge, Sweden), as well with as the inks originally used and provided by the patient (Golden Yellow, Bright Red, Light Green, and Tribal Black; Intenze, Paramus, New Jersey) patch tested "as is". Readings on day (D) 2 and D4 gave negative results. The 3 problematic inks (yellow, red, and green) shared an azo pigment called Pigment Yellow 65 (CI 11740), which was not in the black ink. The other components present in the green ink were: phthalocyanine blue BN (CI 74160) and titanium white (CI 77891). The red ink contained 2 other azo pigments: Pigment Red 210 (CI 12477) and Pigment Orange 13 (CI 21110). Titanium white was present in the yellow ink along with Pigment Yellow 65. The black ink contained Pigment Black 6 (CI 77266). All inks contained the same preservatives. These data on the ink composition, the clinical features and the biopsy led us to diagnose a probable allergic reaction to Pigment Yellow 65, which was the only compound present in the 3 causative inks. We were not able to obtain Pigment Yellow 65 to perform patch testing.

## DISCUSSION

Azo pigments belong to a wide class of synthetic organic pigments whose molecular structure contains the nitrogen azo group  $N=N$ . These pigments achieve bright, high-intensity colours.<sup>1</sup> Pigment Yellow 65 is a mono azo pigment, with a bright reddish yellow shade. It has high spread power and good light fastness, and is also quite resistant to solvents, acid, and alkali. Its main use is in industrial and decorative paints, but it is also used for colouring rubber.<sup>2</sup> There is some evidence for the involvement of azo



**FIGURE 1** Tattoo reaction affects all areas of the tattoo injected with yellow, red and green ink, and is absent in the areas tattooed with black ink

pigments in hypersensitivity reactions to tattoos, but this is difficult to prove, because the diagnostic value of patch testing in this context has not been well demonstrated. Most cases give negative or inconsistent test results, even when the same ink is used. Some authors have speculated that the actual allergen is not present in the ink, but is formed in the dermis following a process of haptenization, explaining the negative test results.<sup>3</sup> For this reason, we cannot conclude for certain that Pigment Yellow 65 is the culprit hapten. However, we believe that reporting our experience can contribute to improving the understanding of this type of reaction.

#### ORCID

Iris González-Villanueva  <http://orcid.org/0000-0003-4243-2920>

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