

Allergic contact dermatitis caused by a jagua temporary tattoo

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Whilst the sensitising hazard of p-phenylenediamine (PPD) containing temporary black henna tattoos has been widely reported in the medical literature, little is known about the safety of other temporary tattoos.¹ Jagua temporary tattoos are made from genipin, an extract of the Amazonian jagua fruit (*Genipa americana*) or the South East Asian *Gardenia Jasminoides*.² Genipin binds spontaneously to epidermal proteins to form blue-black pigments which stain the skin for up to ten days. Interestingly, *Genipa americana* extract has actually been used by indigenous populations as a body, hair and clothing dye for many years and the ripe fruit can also be consumed.² *Gardenia Jasminoides* has been used in Chinese herbal medicine since the Han dynasty.² We present a case of allergic contact dermatitis to a temporary jagua tattoo.

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A 25-year-old beauty therapist developed a pruritic, blistering rash on her forearm at the sites where she had applied a jagua tattoo three weeks previously (Fig. 1). The rash (Fig. 2a) settled on treatment with a potent topical corticosteroid, but post-inflammatory hyperpigmentation was still evident five months later (Fig. 2b). There was no history of sun exposure. She had used black henna tattoos in the past without a problem but had wanted on this occasion to try a more 'natural' alternative. Friends that had also applied this jagua tattoo at the same time had not reported any reactions. Patch tests to the extended British baseline series of allergens including PPD and toluene-2,5-diamine were entirely negative at days 2 and 4. An open application test with undiluted jagua tattoo gave a clear positive reaction at 48 hours with erythema and swelling at the application site.

Different brands of jagua tattoo exist and their ingredients may vary. The full ingredients listed in our patient's tattoo were *Genipa Americana*, xanthan gum, potassium sorbate, citric acid and olive oil. To our knowledge, there are only two other cases of allergic contact dermatitis (ACD) to jagua tattoos reported in the English literature.^{2,3} In one case, full ingredient testing was carried out including xanthan gum and sorbic acid and the authors found that genipin in concentrations as low as 0.5% in dimethylsulphoxide gave positive patch tests.² We did not repeat full ingredients testing however our patient regularly uses cosmetic products containing xanthan gum, potassium sorbate and citric acid.

Despite its traditional use in indigenous populations we have been unable to find any reports of ACD to genipin from Asia or the Americas. It has been postulated that ingestion of this fruit in early life, before its use as a skin paint, may confer tolerance.² The time course of our patient's rash, appearing several weeks after first application of the jagua tattoo is in keeping with a primary sensitisation reaction, suggesting that genipin may be a strong sensitiser probably due to its high affinity for proteins. This molecule is currently under investigation for potential anti-inflammatory, immunosuppressive, antithrombotic, anti-angiogenic and

neuroprotective effects.³ However, high doses in animal studies have reported acute hepatotoxicity via oxidative stress.⁴

The manufacturers of our patient's jagua tattoo state that since sales commenced in 2012, there has been consumer feedback about skin reactions and they advise performing a test patch before full application of the tattoo. We have also found several reports in online forums of rashes consistent with ACD. We report this case to raise awareness of this novel temporary tattoo and the importance of getting a clear history of the agent used when patients present with temporary tattoo rashes. Jagua tattoos are being promoted as a safe alternative to black henna, but this case illustrates that 'natural' is not necessarily risk free.

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Figure legends:

Figure 1: The jagua tattoo photograph taken one day after application

Figure 2: a) Three weeks after application of the jagua tattoo. b) The post inflammatory hyperpigmentation 5 months after the incident





