

# Ocular effects of *Euphorbia trigona* sap: a case report

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## Abstract

*Background:* African milk tree (*Euphorbia trigona*) sap contains toxic components, notably ingenol esters, causing cytotoxicity to corneal cells and hindering healing, thereby causing toxic keratopathy.

*Case report:* We present a case of ocular injury in a 45-year-old man following exposure to *Euphorbia trigona* sap during gardening. Despite immediate irrigation, the patient experienced discomfort, redness, and reduced vision in his right eye. Treatment involved aggressive topical antibiotics and subsequent corneal debridement.

*Conclusion:* *Euphorbia trigona* sap contains cytotoxic properties results in defective corneal epithelial healing. Understanding variations in latex compositions across species aid in clinical anticipation and individualised treatment.

*Keywords:* *Euphorbia trigona*, toxic keratopathy

## Kesan okular *Euphorbia trigona*: laporan kes

### Abstrak

*Latar belakang:* Getah African milk tree (*Euphorbia trigona*) mengandungi komponen toksik, terutamanya ester ingenol, yang menyebabkan sitotoksiti terhadap sel-sel kornea dan menghalang proses penyembuhan, seterusnya mengakibatkan keratopati toksik.

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*Laporan kes:* Kami membentangkan kes kecederaan okular pada lelaki berusia 45 tahun berikutan pendedahan kepada getah *Euphorbia trigona* semasa berkebun. Walaupun pengairan segera dilakukan, pesakit mengalami ketidakselesaan, kemerahan, dan penglihatan berkurangan di mata kanannya. Rawatan melibatkan antibiotik topikal yang agresif dan pengelupasan kornea yang seterusnya.

*Kesimpulan:* Getah *Euphorbia trigona* mengandungi sifat sitotoksik yang mengakibatkan penyembuhan epitel kornea yang tidak sempurna. Pemahaman terhadap variasi dalam komposisi lateks antara spesies dapat membantu dalam jangkaan klinikal serta rawatan yang disesuaikan secara individu.

*Kata kunci:* *Euphorbia trigona*, keratopati toksik

## Introduction

*Euphorbia trigona*, also referred to as the African milk tree, has garnered immense popularity due to its affordability, easy cultivation, and cultural significance. However, its latex harbours multiple toxic components that induce irritation in both skin and mucosa. Particularly, ingenol esters present in *Euphorbia trigona* exhibit potent cytotoxicity against keratocytes, hindering their proliferation and healing abilities within 24 to 48 hours of contact.<sup>1</sup> Furthermore, these compounds activate protein kinase C enzymes, potentially accounting for the hindered corneal epithelial healing and the likelihood of pronounced inflammation in the conjunctiva, cornea, and intraocular tissues. It's noteworthy that earlier reports have mentioned the antimicrobial properties associated with *Euphorbia* species' latex.<sup>1-2</sup> We present a case of rare case of alleged cactus sap chemical injury that results in defective epithelial healing.

## Case presentation

A 45-year-old Malay man presented at the ophthalmology clinic experiencing discomfort, redness, and reduced vision in his right eye 1 day after exposure to *Euphorbia trigona* sap during gardening, despite immediate and thorough eye irrigation. He had no prior medical conditions, no known allergies, no pertinent systemic symptoms or family history. Examination revealed his visual acuity as OD 6/24 OS 6/9, with a bilateral intraocular pressure of 14 mmHg. Ocular pH stood at a neutral 7.4. Slit lamp examination indicated conjunctival hyperaemia and inferior corneal epithelial loss with sloughing along the superior edge, accompanied by a Descemet fold (Fig. 1). No signs of bacterial infection or foreign body presence were noted. Anterior chamber remained unremarkable, and posterior segment examination revealed no abnormalities.

Treatment commenced with aggressive topical antibiotics—ceftazidime 5% hourly and gentamicin 0.3% hourly—alongside appropriate oral analgesics. Upon review the next day, the patient exhibited improved vision at 6/18, with noticeable healing of the corneal epithelium, albeit with poor anterior stromal contact while the Descemet fold had resolved (Fig. 2). Subsequent corneal epithelial debridement was performed while maintaining the regimen of topical antibiotics and lubrication. Within 8 days from onset, the patient fully recovered with restored normal vision.



*Fig. 1.* Right eye, 1 day post exposure to *Euphorbia trigona* sap. Conjunctiva displaying hyperaemia, with a sizable area of inferior corneal epithelial loss measuring 2.6 mm x 2 mm, accompanied by epithelial sloughing along the superior border. A Descemet fold was observed over the region of epithelial loss, yet no corneal stromal oedema was present.



*Fig. 2.* Right eye, day 2 from onset. The corneal wound displayed ongoing healing, with remnants of corneal epithelial sloughing and insufficient adherence to the anterior stromal layer, making it prone to easy peeling. Both the Descemet fold and conjunctival hyperaemia had resolved.

## Discussion

Comparative brief analysis with prior case reports, although involving distinct *Euphorbia* species, reveals consistent initial symptoms post-sap contact, including pain, reduced vision, lacrimation, blepharospasm, and photophobia. These symptoms often exacerbate over time. Clinically, the cornea typically exhibits a progression from a clear to minimal epithelial defect, potentially advancing to extended defects, stromal oedema, or Descemet striations by day 2. Most cases in reported series manifest conjunctival hyperaemia, with some presenting mild to moderate anterior uveitis.<sup>3-5</sup> Left untreated, complications may include corneal scarring, significant anterior chamber inflammation, and the development of anterior staphyloma.<sup>3</sup> Treatment commonly involves topical antibiotics, frequently combined with cycloplegics and steroids, resulting in satisfactory visual recovery within 1 to 2 weeks for most patients.<sup>3-5</sup>

In this specific case, clinical findings align closely with the chemical properties of *Euphorbia* latex. Observations revealed epithelial sloughing, partial loss, stromal oedema, and Descemet striations. Notably, poor corneal epithelial contact with the stroma on day 3 necessitated desloughing to prevent recurrent erosion. Unlike prior findings, the treatment regimen in this case included solely topical antibiotics, without the addition of cycloplegics or steroids, resulting in recovery without anterior chamber inflammation.

## Conclusion

Insights gleaned from this case and previous reports emphasize the critical need for using protective gear, immediate irrigation, and early consultation, even when initial expectations are positive, to prevent severe complications. Furthermore, comprehending that diverse latex compositions across various species may contribute to varying clinical presentations and severity underscores the necessity for a broader dataset of cases to draw conclusive insights.

## Declarations

### Informed consent for publication

The patient provided informed consent for the publication of the clinical data and images contained in this case report.

### Competing interests

None to declare.

**Funding**

None to declare.

**Acknowledgements**

The authors would like to thank their colleagues and staff nurses for their help in managing the case.

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