***Case study***

# Chemical injury due to red balm- Case series

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## ABSTRACT

Ocular chemical injuries accounts for 11.5% to 22.1% of ocular injuries. Ocular chemical burns are an ophthalmic emergency and requires immediate treatment. We report a series of three cases of chemical injury secondary to accidental exposure to red balm used as local application for headache. In our cases menthol, cajuput oil and capsaicin may have contributed to chemical injury and nerve damage. Nerve damage may have lead to delayed epithelial healing. All three patients improved completely within 1 to 3 week.


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## KEYWORDS

Chemical injury, red balm, balm injury, cornea


## INTRODUCTION

Ocular chemical injuries accounts for 11.5% to 22.1% of ocular injuries. Ocular chemical burns are an ophthalmic emergency and requires immediate treatment. [1] After chemical injury, the goal of therapy is to restore a normal ocular surface and corneal clarity. As per our knowledge no case reports of chemical injury due to red balm are reported. We report a series of three cases of chemical injury secondary to accidental exposure to red balm used as local application for headache.

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## CASE REPORT

Three patients presented to us on different days with sudden diminution of vision, pain, redness, watering and photophobia. All three patients had history of accidental entry of red balm while applying on forehead for headache. Two patients had bilateral while one had unilateral presentation. On examination all three patients had decreased visual acuity with lid edema. On slit lamp examination conjunctival congestion, corneal epithelial defect and diffuse corneal edema was present. Epithelial defect was fluroscein stain positive. Rest of the anterior segment examination was normal. intaocular pressure measured with noncontact method was within normal limit in all cases.(Table 1) After giving thorough saline wash all patient was started on topical Gatifloxacin 0.3% with Prednisolone 1%, Carboxymethylcellulose eye drop 1%, Atropine sulphate eye drop 1%, along with bandage contact lens. Systemic steroids according to weight was given and tapered, systemic vitamin C 500 mg thrice a day, analgesic and antacid for 3 days were given. All three patients improved completely within 1 to 3 week.(Table 1) In case 1 epithelial defect was completely healed by day 10 but stromal edema has taken 3 weeks to resolve completely. Case 2 responded very well to treatment with improvement in vision and

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almost healed epithelial defect with minimal stromal edema by day 10, complete recovery has taken almost 2 weeks. In case 3 stromal edema resolved completely after 10 days but epithelial defect has taken long course of around 3 weeks to completely heal.

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**Table 1 Epidemiological profile**

| | Case 1 | | Case 2 | | Case 3 |
|---|---|---|---|---|---|
| Age/sex | 64/Female | | 60/Female | | 62/Female |
| | RE | LE | RE | LE | LE |
| Visual acuity at presentation | CFCF | CFCF | 6/60 | CF 3m | CF 3m |
| Conjuctival congestion | + | + | + | + | + |
| Corneal epithelial defect | 8*7mm corneal epithelial defect | 7*6.5 mm corneal epithelial defect | 5.5*4.5 mm central corneal epithelial defect | 5.5* 5 mm central corneal epithelial defect | 7*6.5mm corneal epithelial defect |
| Corneal edema | + | + | + | + | + |
| IOP | 16 | 14 | 18 | 16 | 14 |
| Duration of recovery | 3 week | 3 week | 2week | 2 week | 3 week |
| Final visual acuity | 6/60 | 6/60 | 6/24 | 6/36 | 6/12 |

## DISCUSSION

The chemical injury was caused by red balm in these cases which is used for local application for relieving pain such as headache, joint pain. The main constituent in this balm is Menthol 20%, Oil of Gaultheria 25%, Cajuput Oil 5%, Clove Oil 5%, Capsaicin Extract 0.02%. Out of these capsaicin related ocular chemical injuries are

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reported in past.[2,3] Menthol also causes ocular surface damage.[4 ] Both cajuput oil and capsaicin are irritant and causes ocular surface damage. Capsaicin is principal ingredient of pepper spray. Confocal microscopic examination of the cornea after exposure to pepper spray has revealed nerve damage and keratocyte activation within the anterior two-thirds of the stroma.[5] The physiology underlying the toxic effect of capsaicin involves massive calcium entrance that leads to cell damage and functional inactivationrendering the nerve endings insensitive to further stimuli.[2]

In our cases menthol, cajuput oil and capsaicin may have contributed to chemical injury and nerve damage. Nerve damage may have lead to delayed epithelial healing. It is best to use these products cautiously to prevent chemical injury.

## CONCLUSION

Menthol, cajuput oil and capsaicin are common constituents of red balm and causes severe chemical injuries to eye. These injuries should be treated promptly. It may require long period to heal epithelial defect and stromal edema to resolve. So it is best to prevent these accidental exposure.

**COMPETING INTERESTS DISCLAIMER:**

**Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.**

## BIBILOGRAPHY

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