

CASE REPORT

 OPEN ACCESS

Received: 01-10-2023

Accepted: 12-10-2023

Published: 17-11-2023

Citation: Gnanasekaran K, Jayakumar D (2023) Multisystem Organ Failure in A Patient with Eucalyptus Oil Poisoning – A Case Report. Indian Journal of Science and Technology 16(43): 3959-3961. <https://doi.org/10.17485/IJST/v16i43.2475>

* Corresponding author.

kktva16@gmail.com

Funding: The APC fully defrayed by Indian Society for Education and Environment (iSee, Chennai)

Competing Interests: None

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Published By Indian Society for Education and Environment ([iSee](#))

ISSN

Print: 0974-6846

Electronic: 0974-5645

Multisystem Organ Failure in A Patient with Eucalyptus Oil Poisoning – A Case Report

Kumaran Gnanasekaran^{1*}, Devachandran Jayakumar²¹ Anaesthesia and Intensive Care, Pinderfields Hospital – Mid Yorkshire NHS Trust, United Kingdom² Chief Consultant – Intensive Care, Dr Kamakshi Memorial Hospital, Chennai, India

Abstract

Objectives: To report a case of Eucalyptus oil (EO) poisoning by an 18-year-old boy. **Methods:** A case study of an adult who attempted suicide with EO, initially presenting with neurological symptoms, gradually developing multiorgan failure, and received treatment through a multidisciplinary approach. **Findings:** An 18-year-old boy with an alleged history of consuming approximately 50ml of EO experienced a seizure and was initially treated at an outside hospital. He was later referred to a private hospital in Chennai, India, for further management. Subsequently, he developed multiorgan failure and was treated through a multidisciplinary approach. **Recommendation:** Proper awareness campaigns should be conducted among the public to prevent accidental ingestion of EO. Health hazard notifications should be prominently displayed on such products to ensure safe handling. Additionally, the inclusion of a centralized medical helpline for public benefit is advisable.

Keywords: Eucalyptus Oil; Poisoning; Neurotoxicity; Seizure; Organ Failure; Over Dose

1 Introduction

Eucalyptus oil (EO) is derived from the leaves of Eucalyptus species, with its primary constituent being 1,8-cineole (60–85%)⁽¹⁾. These essential oils are known for their antibacterial, antioxidant, and anti-inflammatory properties⁽²⁾. Traditionally, EO has been used as a decongestant to alleviate symptoms of nasopharyngeal infections and coughs. It is administered internally through inhalations, lozenges, pastilles, and externally as ointments⁽³⁾, making it a common household item.

EO has been associated with fatalities in adults at doses of 200 to 250 ml and in children at 15 ml⁽⁴⁾. However, cases of multiorgan failure due to EO are rare, particularly in adults, and have not been extensively reported.

EO poisoning is most frequently reported in children who accidentally ingest it, and its neurotoxic effects are well-documented^(5–7). Upon ingestion, EO rapidly spreads throughout the body, and even small amounts can be toxic. Despite its extreme toxicity when ingested, there remains a lack of sufficient public awareness regarding its dangers.

This study presents the first documented case of a young adult purposefully ingesting EO, resulting in multiorgan failure. It underscores the importance of a multidisciplinary approach in successfully managing patients suffering from EO poisoning.

2 Methodology

It is a case presentation study; this case involves, an eighteen-year-old boy with an alleged history of consuming approximately 50ml of EO. He initially presented at an outside hospital with seizures and was treated with anticonvulsants, despite having no previous history of seizures. His baseline investigations, including blood sugar, kidney function, liver function, and serum calcium, were all within normal ranges. On day 2 of admission, he became breathless and hypoxic, hence referred for further management to our hospital where the present case study is done.

3 Results and Discussion

A review of the literature reveals that reported cases of eucalyptus oil poisoning primarily exhibit symptoms related to the central nervous system, with paediatric patients more commonly affected than adults. Instances of EO poisoning leading to multisystem organ failure are exceedingly rare. In this study, we present a unique case in which an adult patient deliberately ingested EO, resulting in multisystem organ failure.

The patient's initial symptoms included a burning sensation in the throat, upper abdominal discomfort, and seizures. Subsequently, he developed Acute Respiratory Distress Syndrome (ARDS), which progressed from a moderate to severe condition. He also suffered from acute kidney injury with metabolic acidosis, acute ischemic hepatitis, and rhabdomyolysis, which further exacerbated his renal injury.

The patient received comprehensive supportive care, including lung-protective ventilation and renal replacement therapy in the form of Sustained Low-Efficiency Dialysis (SLED), which led to an improvement in renal function. Additionally, he developed a secondary bacterial lung infection, necessitating treatment with appropriate antibiotics. Over time, the patient was successfully weaned off the ventilator, and his other organ systems showed signs of improvement, eventually leading to his discharge home.

Table 1. The cases of EO ingested with various side effects reported from literature

	Affected Population	Volume Consumed	Presentation	Time Of Presentation
(5)	2 adult patients	15ml	Seizures, Metabolic acidosis	Not known
(6)	6 year old boy 3year old boy	10ml 5ml	Status epilepticus Seizures	10minutes 10minutes
(7)	17 months old girl baby	0.5ml	Drowsiness	Not known
(8)	34year old women	600-1000ml	Unresponsiveness, shock.	30minutes
(9)	6year old girl	Not described	Slurred speech, ataxia, muscle weakness, unconsciousness	Not known
(10)	3 year old boy	10ml	Unresponsiveness, shock	30minutes

4 Conclusion

This study presents a unique case of eucalyptus oil poisoning in an adult (18 years old) who ingested 50 ml of the substance. The patient initially exhibited neurological symptoms and subsequently experienced a gradual progression of symptoms leading to multiorgan failure, a rarity in reported cases from India.

EO, given its affordability and widespread presence in households, can pose a significant risk for self-poisoning or accidental ingestion. Therefore, we believe that our case report holds valuable insights for future reference. Accidental ingestion is more prevalent among children than adults, as indicated by available reports. It underscores the importance of raising awareness about the adverse effects of EO ingestion and emphasizing the need to store it out of reach of children.

5 Acknowledgement

The APC fully defrayed by Indian Society for Education and Environment is appreciated.

6 Ethics approval and consent to participate

Ethical approval was given by the institutional ethics committee, and informed consent was obtained from the patient.

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