

## Case report on Celphos (Aluminium phosphide) poisoning

Modepalli Poojitha,<sup>1</sup> Yekollu Niharika,<sup>1</sup> Gutti Keerthi,<sup>1</sup> C. Lalitha,<sup>2</sup>  
and K. Arun Chand Roby<sup>1</sup>

<sup>1</sup>ACSR Govt. Hospitals, Nellore - 524003 (India)

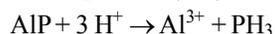
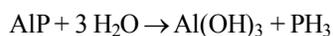
<sup>2</sup>Department of Pharmacy Practice, Ratnam Institute of Pharmacy,  
Nellore - 524346 (India)

<sup>3</sup>Department of Pharmacy practice Vignan Pharmacy College,  
Guntur - 522213 (India)

Corresponding Author: [arunchandroby@gmail.com](mailto:arunchandroby@gmail.com)

### Abstract

Aluminum phosphide is a poison and it occurs due to excess exposure of Aluminium phosphide, which is generally used as a pesticide to kill rodents and insects. It contains Phosphine gas which is mitochondrial poisoning. This is highly toxic. The Centers for disease control, prevention and management have classed phosphine as physically harmful to living, sometimes when 50 ppm. Alumina phosphide needs to react as well as the hydrate but rather acid derivatives between discharge porphyrin.



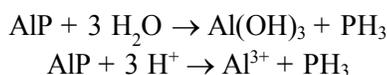
It is sold under Pest phos, Celphos, Quickphos, Fostox, Salphose and Weevil-cide. When humans consume it, it shows fatal effects. Toxic features like circulatory collapse, metabolic acidosis and renal failure occur within a few minutes of ingestion. It has a high mortality rate of 90-100% of deaths with consumption of 1-3 tablets. There is no specific antidote for this poisoning. It is reported as a leading cause of suicidal deaths in most of India's northern and southern states. This case involved a patient with Celphos poisoning who ingested two Aluminium phosphide tablets. This case report underscores the importance of Educating illiterates regarding these pesticides and the fatal effect that may be observed. By giving immediate therapy and supportive care patient's life is saved.

**Key words :** Aluminium Phosphide, Metabolic acidosis, Celphos, Mortality rate, Suicide.

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<sup>1</sup>VI th year Pharm D student, <sup>2</sup>Assistant professor, <sup>3</sup>Associate Professor,

Aluminium phosphide is just an extremely poisonous synthetic compound freely available as a fumigant and oral pesticide. It is widely used as a grain preservative.<sup>1</sup> This is a colorless solid, but it is decided to sell even though the grayish-greenish powder is mainly due to harmful byproducts that arise once hydroxylation and oxidizing. A combination of Aluminium and phosphide synthesizes it.<sup>2</sup> This generates Phosphine gas which is very hazardous. Aluminium phosphide must react as well as the hydrate and acid derivatives between discharge phosphines.<sup>1,3</sup>



Normally it is used to kill moles, rodents and insects. When consumed it, it reacts with the acid in digestive tract to liberate Phosphine gas.<sup>4</sup> It is sold under Pestphos, Celphos, Quickphos, Fostox, Salphose and Weevil-cide. When humans consume it, it shows fatal effects. The Centers for disease control and preventive measures (C.D.C) have also classified phosphines as life-threatening, living at 50 ppm.<sup>5</sup> Symptoms include vomiting, diarrhea, hypotension, bradycardia, severe metabolic acidosis, tremors, and muscle weakness. If there is severe inhalation we can observe arrhythmias, middle eastern respiratory disorder (ARDS), cardiac arrest, convulsions and unconsciousness. There is no specific antidote for this poisoning. It is reported as a leading cause of suicidal deaths in most of India's northern and southern states. It is largely under-reported problem in India. In some regions, it is also called 'rice tablets'.<sup>6</sup> After ingestion of aluminium phosphide within a few

hours, there is a high risk of profound shock, myocarditis, and multi organ failure leading to death.

Usual fatal dose: 0.15 – 0.5 grams. Each tablet is 3g (mixed with urea and  $\text{NH}_2\text{CO}_3$ ), and each tablet liberates 1g of phosphine. A.L.P has a high mortality rate of 90-100% of deaths within 24 hours of ingestion.<sup>7</sup>

Fatal period: 1-4 hours

*Diagnosis :*

This same assessment, like aluminium alloy phosphides going to poison (alp), is based on the patient's history, garlicky & fish odor, and abnormal blood levels. The silver nitrate-impregnated test was done in the gastric fluid and breaths to confirm the diagnosis.

*Treatment :*

No specific antidote exists, but immediate care and supportive therapy help improve the condition. Adjustment like diabetic ketoacidosis is indeed a core component of the therapy. Magnesium sulphate helps in decreasing fatal outcomes.

*Case report :*

The 48 yrs old male client displayed to the urgent emergency departments after he was suddenly found unconscious at his home. The physician asked his attendants about any poison consumption. Attendants reported not known. Then physicians performed gastric lavage and confirmed ingestion of an unknown poison. After thoroughly reviewing the patient's condition and odors, the physician team

confirmed it as Aluminium phosphide poisoning and asked the patient attendants to search for any bottle. Later his wife brought the Celphos bottle which is found in his residence.<sup>1</sup> As there is no specific antidote, Physicians performed immediate therapy and gave supportive care. After consistent treatment, patient regained consciousness on the 20<sup>th</sup> day.

*Past medical history:* Nil

*Examination :*

CVS- S1S2 abnormal

RS-Ischemic conditions are reported,  
2D ECHO- L.V.H,  
Daily monitoring of Blood pressure, Temperature,  
Random blood sugars.

*Tests performed :*

CBP, CUE, ECG, INR, RFT, LFT, 2D-ECHO,  
Serum Cholinesterase, Silver nitrate test,  
gastric aspartate test

**Diagnosis :** Aluminum phosphide poisoning

*Treatment :*

Treatment	Generic name	Class	No. of days	R.O.A	Frequency
Oxygen therapy on ventilation	Oxygen	Medical gas	12	Inhalation	
Inj. MVI	Multivitamin injection	Nutritional supplements	20	IV	Bd
IV Fluids	Intravenous fluids		18	IV	Tid
Resource high pro mixed with water	Protein powder		20	IV	Tid
Inj. Rerverve plus – BT	Benfotiamine	Multivitamin	20	IV	Bd
Inj. Dopamine	Dopamine	Vasoconstrictor and Inotrope	09	IV	Bd
Inj. Norad	Noradrenaline	Catecholamine	06	IV	Bd
Inj. Na <sub>2</sub> CO <sub>3</sub>	Sodium Bicarbonate	Alkalizing Agents	10	IV	Bd
Inj. Pantop	Pantoprazole	Proton pump inhibitors	20	IV	Od
Inj. MgSO <sub>4</sub>	Magnesium Sulphate	Anticonvulsant	15	IV	Tid
Activated charcoal + Sorbitol	Activated charcoal + sorbitol	Gastric decontamination agent + Laxative	5	Oral	Bd

Inj. Hydrocort Inj. Piptaz	Hydrocortisone Piperacillin+ Tazobactam	Corticosteroids Penicillin+ Beta lactamase inhibitors	15 7	IV IV	Bd Bd
Inj. Sulbacef	Sulbactam + Cefoperazone	Beta lactamase inhibitor + Cephalosporin antibiotics	5	IV	Bd
Inj. Ceftriazone	Ceftriazone	Cephalosporin antibiotics	7	IV	Bd

*Discharge medication :*

- 1) Tab. Pantoprazole – 40 mg OD
- 2) Tab. B complex
- 3) Take adequate test
- 4) Do Not exposure to chemicals

A male patient attended ER with Celphos poisoning who ingested 2 aluminium phosphide tablets. After several attempts by physicians for immediate therapy and supportive care to the patient regained consciousness on 20<sup>th</sup> day. Symptomatic treatment of the patient with the different classes of drugs at right time increased the chance of survival. The survival rate is very less in A.L.P poisoning<sup>4</sup>. The patient is stable, conscious, coherent and oriented. The patient attended three psychiatric sessions, and betterment was observed. After one week of monitoring, the patient was discharged as his condition improved. Physicians and clinical pharmacists worked continuously to save the life of humans.

Our study is about consumption of aluminium phosphide poisoning. It is a poisonous pesticide and rodenticide available freely in the market. When exposed to environment releases Phosphine gas which is

dangerous to animals. Patient had undergone severe symptoms and if the treatment was inappropriate it could cost the patient's life. By giving immediate therapy and supportive care patient's life is saved. Government has to take measures while selling the pesticides and educating the people about toxicity and lifetime morbidity and mortality.

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