

# Hypothesize to Designing Antidotes to Treatment of Aluminum Phosphide Poisoning

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## Abstract

Aluminum phosphide as rice pesticide has the public use in Iran. Phosphorus available in brass tablets immediately after dissolving and becoming is absorbed in the blood stream and is converted to compound of PH<sub>3</sub> or phosphine. Therefore the devastating and deadly cause of the toxicity compound is PH<sub>3</sub> which place of function or its damage target is heart. Unfortunately because the lack of suitable antidote and appropriate therapies to poisoned person who comes to the emergency hospital and just death several hours after their poisoning. Annually at least some poisoned people with ALP tablets were death in Sina hospital of Tabriz/Iran. So according to mortality reports this publish try to showing and finding proper antidote and treatment.

**Keywords:** ALP Tablet (Aluminum phosphide); Phosphine; Poisoning; Antidote; Antioxidants hydroquinone; Physician's supervision

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## Introduction

The tablets may be available children and old folks caused an accidental poisoning and may have committed used for suicide attempts in teen and young people at home. Because if it is not applying the certainly appropriate therapeutic action for the poisoned patient they will even be died. So it looks like that using proper antidote this death and devastating factor in the body is removed and its operation is inhibited or neutralized. Unfortunately because the lack of suitable antidote and appropriate therapies poisoned person that comes to the hospital and just deaths several hours after their poisoning. Of course nowadays in the final stages of treatment in hospitals in order to prevent the patient's deaths blood replacement have also been reported in Tehran/Iran [1].

## Methods

The ALP tablets immediately dissolved in stomach pH and absorbed in the gastrointestinal. So not only ¼ of tablet will dissolve and cause the person to be poisoned but also even with the release of 1/6 pills, death reports have been happened. Phosphorus available in brass tablets immediately after dissolving and becoming absorbed in the blood stream is converted to compound of PH<sub>3</sub> or phosphine. Therefore the devastating and deadly cause of the toxicity compound is PH<sub>3</sub> which place of function or its target is heart. And with the make of a dysrhythmia

it causes the death of poisoned person. Of course nowadays in the final stages of treatment in hospitals in order to prevent the patient's deaths safety blood replacement have also been reported.

## Results

Potassium permanganate is the first antidote used in the early stages of Aluminum phosphide tablets swallowing. This prevents from the tablet opening and dissolving. Medications and supportive treatment such delete of free radicals and toxins residues should be considered under the physician's undervision. Despite of specialist physician trying in emergency of hospitals in a randomized annual mortality reports are available at poisoning treatment centers in Iran, especially in Sina Hospital of Tabriz/Iran. Also annually at least some poisoned people with ALP tablets were death in Loghman hospital of Tehran/Iran.

## Discussion

So it looks like that using proper antidote this death factor in the body is removed and its operation is inhibited or

neutralized. Estimate the appropriate antidote as a view point *insilico* toxicology hypothesis with respect to molecular properties of PH<sub>3</sub> structure with it's including Electron pairs. Because phosphine has a link with drugs with specificity such low risk and strong electrophile properties [2-4]. Some of these antidotes are recommended with nontoxic doses such as combination of ortho- and para-hydroquinone, and carnosic acid or carnosol compounds that are found in the herb rosemary (*Rosmarinus officinalis*) and other drugs such Acetaminophen and phenobarbital [5-7] in the first stage of poisoning, it consider combination of usage drugs these drugs strongly connect to PH<sub>3</sub> molecules. And although with regard to above mentioned medications as well as after dissolving and absorbing in the body they create dangerous free radicals too. So in the next step to increase the defensiveness activities to remove of free radicals application of hemoperfusion, hemofiltration, hemodialysis are recommended [8-10]. Then poisonous persons must use the appropriate antioxidant drugs with specify of low risk such vitamin E and vitamin C and curcumin and other medication such as digoxin in nontoxic

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doses to poisoning treatment proposal. Of course, other supportive therapy proceedings should also be applying undervision of the specialist physicians [11-13].

## Conclusion

Attention to incidence and mortality of aluminum phosphide poisoning in the around of the world it considers the finding of proper antidote is necessary. Because nowadays it is not found real antidote to this poisoning, so this study recommends that according to state of *insilico* toxicology methods giving hypothesize to designing antidotes to treatment of Aluminum phosphide poisoning is requirement to treatment.

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