

Ambiguous Phorate Granules for Sesame Seeds Linked to Accidental Organophosphate Fatal Poisoning.

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ABSTRACT

Ingestion of organophosphate compound for suicidal attempt is a major health problem in developing countries. However, unintentional ingestion by an adult is rare. An 80-year-old lady and her 30-year-old granddaughter consumed phorate (organophosphate) granules thinking it to be the seeds of sesame. After grinding the granules and mixing with pickle, they consumed the preparation with rice. The granddaughter was brought dead at emergency department and the older lady after resuscitation shifted to intensive care unit. She was extubated on 17th day and discharged on 23rd day. Pesticide formulation resembling any edible items must be withdrawn from the market at the earliest. Stringent regulation on vendors, apparent formulation or packaging and education about the hazards of these compounds can prevent this type of unintentional poisoning.

Keywords: Ambiguous, organophosphate, phorate, sesame seeds, unintentional poisoning

INTRODUCTION

The worldwide incidence of pesticide poisoning is 3 million (1 million unintentional and 2 million intentional) each year.¹ Most of the poisonings and 99% of the deaths occur in developing countries.² Agriculture being the main occupation in Nepal, these compounds are widely and easily available in the countryside. Among the cases of acute pesticide poisonings in Nepal, most are intentional followed by occupational and domestic accidental.³ Although intentional ingestion of organophosphate for suicide attempt is most common, its unintentional ingestion by an adult is rare.⁴ In this first

kind of report, we wish to share an interesting case of the accidental ingestion of phorate (organophosphate) granules by adults mistaking them for sesame seeds, a commodity popularly consumed in Nepal.

CASE REPORT

An 80 year-old lady and her 30 year-old granddaughter were brought to the emergency department of our hospital at with a history of excessive salivation, slurring of speech, repeated vomiting, frequently passing stool

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and urine and loss of consciousness. They started developing these signs immediately after having dinner 3 hours back. The younger woman was pronounced dead on arrival. The older woman was unconscious with Glasgow Coma Scale of 3/15, irregular respiration and bilateral non-reacting pin point pupils. She was intubated, treated with atropine and pralidoxime and shifted to intensive care unit for mechanical ventilation. Later, it was revealed that the woman and her granddaughter had accidentally consumed phorate granules (figure 1) mistaken for Sesame seeds (*Sesamum indicum*) (figure 2). After grinding the granules and mixing with pickle, they had consumed the preparation with rice leading to this accidental poisoning. The woman in intensive care unit recovered progressively to be extubated on 17th day and discharged on 23rd day.

DISCUSSION

Sesame seeds are widely encountered in tropical regions around the world. They are for eating whole and for conversion into edible oil. It is popularly consumed in Nepal as 'Achar' pickle and a type of sweet preparation 'Laddu' for its taste and high fat content.

Phorate, is one of the organophosphate pesticides which inhibits enzyme cholinesterase. It is marketed under various trade names and is available as 10%, light gray to brown colored granules, which as pesticide are applied directly to the soil.⁵ Marketing of this product is legal in Nepal, and is imported mainly from India. It has been implicated in several poisoning cases earlier, the majority of which occurred due to accidental inhalation.⁶ As evident (figure 1, 2),



Figure 1. Phorate granules as brought by the relatives.
Figure 2. Sesame seeds showing stark resemblance to phorate granules.

the phorate granules, in size and color are similar to sesame seeds and it is difficult to differentiate between the two at a glance. These ambiguities lead to accidental poisoning in our patients as they mixed phorate granules with pickle to prepare pickle in place of sesame seeds. The first patient in the same incident probably consumed a large quantity and expired on the way to the hospital. The second patient resuscitated in the emergency department, was treated in the intensive care unit, where she progressively recovered and was discharged 23 days later.

Pesticide use has increased in modern agriculture practice and hence their domestic availability has also increased. This is fraught with the hazard of confusion during storage as happened in this instance.

Acute organophosphate poisoning is a significant cause of morbidity and mortality especially in developing countries where health care facilities are not easily accessible. A high death rate is reported amongst those who ingest it.⁷ Delay in diagnosis and treatment is critical in increasing morbidity and mortality. In our case this is apparent as our patients took three hours to reach the hospital after developing poisoning symptoms.

CONCLUSIONS

We wish to emphasize that manufacturers must not market insecticides in formulation which have any resemblance with edible items either in shape, size or color to avoid accidental consumption. Any such kind of preparation must be withdrawn from the market as soon as brought to notice. Stringent regulations on vendors, apparent formulation or packaging and education about the hazards of these compounds can prevent such accidents.

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REFERENCES

1. Jeyaratnam J. Acute pesticide poisoning: a major global health problem. *World Health Stat Q.* 1990;43:139-44.
2. Gunnell D, Eddleston M. Suicide by intentional ingestion of pesticides: a continuing tragedy in developing countries. *Int J Epidemiol.* 2003;32:902-9.
3. Gupta SK, Joshi MP. Pesticide poisoning cases attending five major hospitals of Nepal. *J Nep Med Assoc.* 2002;41:447-56.
4. Joshi SK. Pesticides poisoning in Nepal. *Kathmandu Univ Med J.* 2003; 1:157.
5. Calora FB, Glass EH, Pescador ML, Barroga SF. Granular soil systemic insecticides (Thimet and Cyolane) and phosdrin foliar spray against the diamond back moth, *Plutella maculipennis* (Curtis) and other pests of cabbage. *Philippine Entomology.* 1968; 1:40-53.
6. Singh S, Chaudhary D, Bechera D, Gupta D, Jindal SK. Aggressive atropinization and continuous pralidoxime (2-PAM) infusion in patients with severe organophosphate poisoning: experience of a northwest Indian hospital. *Hum Exp Toxicol.* 2001;20:15-8.
7. Munidasa UA, Gawarammana IB, Kularatne SA, Kumarasiri PV, Goonasekera CD. Survival pattern in patients with acute organophosphate poisoning receiving intensive care. *J Toxicol Clin Toxicol.* 2004;42:343-7.