

A COMMON MISCONCEPTION IN THE MANAGEMENT OF ALUMINIUM PHOSPHIDE POISONING

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Some of the articles on aluminium phosphide poisoning published in the past year have attracted our attention (1-4). In one of these papers, the patient ingested aluminium phosphide and the authors mentioned potassium permanganate (1:10000) followed by activated charcoal (1 g charcoal per kilogramme of body weight) orally as an option in the management of this toxicity (1). Nasri-Nasrabadi and Marashi recently published their finding that phosphine (PH₃), as a hard nucleophile, and the free oxygen radicals from the resolution of potassium permanganate do not interact with each other (5). Therefore, there is no scientific basis to conclude that potassium permanganate is efficient against aluminium phosphide poisoning. Moreover, although Mehrpour recently expressed his uncertainty about the efficacy of activated charcoal in aluminium phosphide poisoning (6), we disagree with the author's opinion that it is still better to administer it. As the author himself goes on to state no experimental studies have yet determined its efficacy (7).

It has been well-established that activated charcoal has a wide internal surface area consisting of pores, whose size commonly ranges from 10 Å to 20 Å. It is known for its efficient adsorption of toxins of moderate molecular weight (from 100 Da to 800 Da) (7).

The molecular weight of aluminium phosphide is about 58 Da (8); therefore, activated charcoal cannot be expected to adsorb it to a satisfactory extent.

Furthermore, considering that phosphine gas (PH₃) can easily be released from its weak bonds by a metal-based compound such as aluminium phosphide (5), phosphine release undoubtedly follow, even if the mother compound is adsorbed by activated charcoal. The fact that aluminium bounds cause the release of phosphine and that activated charcoal cannot prevent this must be taken into account.

Over the years, many authors have recommended activated charcoal in the basic management of toxicity (7). However, it is our opinion that prescribing activated charcoal in aluminium phosphide poisoning stems from an archaic belief that activated charcoal is superior any other antidote.

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