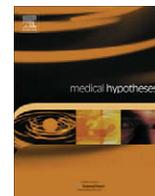


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Correspondence

Hypothesis for risk of death or serious sequela from asthmatic use of magnesium throat lozenges due to 8- to 310-fold rhinovirus release increase by concentrated magnesium

Letter to the editor
Sir:

Concerning my hypothesis of efficacy of magnesium throat lozenges as a rapid acting rescue treatment for asthma as I described in my 2006 article [1] published in this journal, I only worked with adults that had allergy-induced asthma. I did not work with infants or children. There is an important difference between the asthma of adults and that of the pediatric age group. Adult asthma is believed mainly caused by allergy while asthma in children is often caused by rhinoviruses [2].

I have previously discussed the use of a single magnesium throat lozenge (100 mg magnesium producing 100 mM salivary concentration) in greatly worsening and lengthening a rhinovirus-induced common cold in an adult female [1].

Since the effect of 30 mM magnesium (chloride) was established to increase rhinovirus release 8- to 310-fold in vitro [3,4], treatment of rhinovirus-induced asthma with concentrated magnesium from throat lozenges is hypothesized to stimulate the growth of rhinoviruses in their lungs, possibly greatly worsening asthma. I hypothesize that use of magnesium throat lozenges could produce rhinoviral-induced effects that would be severely damaging to the lungs and may be so severe as to be lethal. The rhinovirus release effect of magnesium was demonstrated to over-ride the anti-rhinoviral effects of ionic zinc compounds in a 1987 in vitro study [5]; consequently my hypothesis of stimulation of rhinovirus release and worsened symptomology in an uncontrollable manner is worrisome.

Since zinc lozenges releasing large amounts of anti-rhinoviral ionized zinc (iZn) were effective in rapidly terminating normal common colds in a dose-dependant manner [6,7], but were not effective in the single case of use of a single magnesium throat lozenge [1], I hypothesize that iZn lozenges may not reverse the damage caused by ionic magnesium in patients with rhinovirus-induced asthma.

Consequently, I strongly warn that dietary supplements and drug products containing magnesium should not be allowed to reside in the mouth of children or adults; rather they should be swallowed immediately. Perhaps pediatric magnesium should be in gelatin capsules so that magnesium does not contact the oral and throat tissues of children in any manner. This warning should be interpreted to include all magnesium dietary supplements, magnesium throat lozenges and magnesium sublingual products.

As of this writing I know of no instance where injury has been shown in children or adults, but the risk is apparent to me.

References

- [1] Eby GA. Rescue treatment and prevention of asthma using magnesium throat lozenges: hypothesis for a mouth–lung biologically closed electric circuit. *Med Hypotheses* 2006;67:1136–41.
- [2] Gern JE. Rhinovirus and the initiation of asthma. *Curr Opin Allergy Clin Immunol*. 2009;9:73–8.
- [3] Fiala M, Kenny GE. Effect of magnesium on replication of rhinovirus HGP. *J Virol* 1967;1:489–93.
- [4] Fiala M. Plaque formation by 55 rhinovirus serotypes. *Appl Microbiol* 1968;16:1445–50.
- [5] Geist FC, Bateman JA, Hayden FG. In vitro activity of zinc salts against human rhinoviruses. *Antimicrob Agents Chemother* 1987;31:622–4.
- [6] Eby GA. Zinc lozenges: cold cure or candy? Solution chemistry determinations. *Biosci Rep* 2004;24(1):23–39.
- [7] Eby GA. A review of ionizable zinc (iZn) dose–response criteria from zinc lozenges for common cold clinical trials (1984–2009), Submitted for publication.

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