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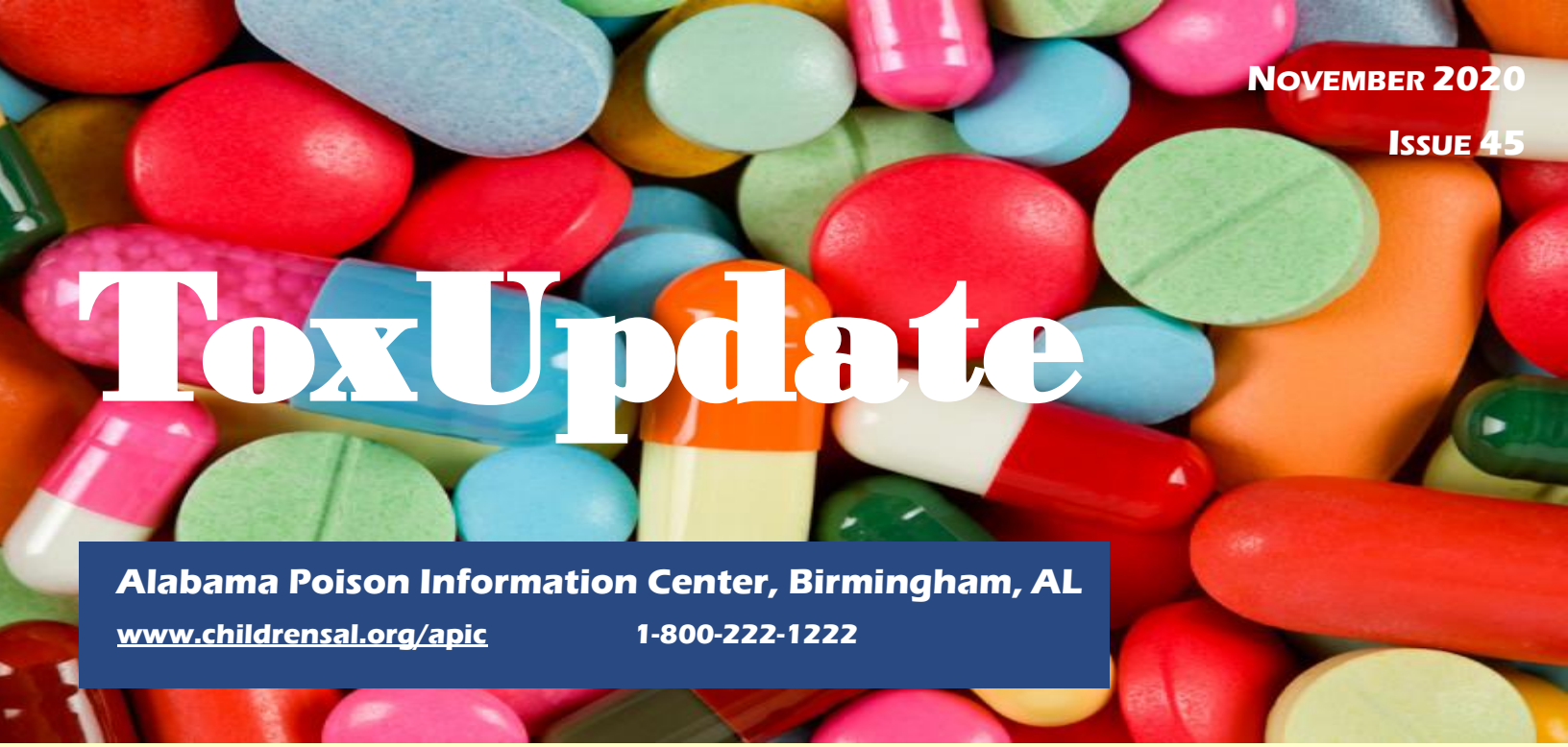

ToxUpdate

Alabama Poison Information Center, Birmingham, AL
www.childrensal.org/apic 1-800-222-1222

Holiday Hazards

By Meghan Ridner, Samford University PharmD Candidate

The holiday season is upon us and that means new - albeit more festive - poison risks enter the household. Many of these new hazards come in highly tempting forms for children. For this reason, it is important to take a few moments to poison proof homes. For any exposure, call Alabama Poison Information Center at 1-800-222-1222.

HOLIDAY PLANTS

Poinsettias have become a holiday plant staple but also have the reputation for being highly poisonous (even deadly) for children and animals. If a child or pet does happen to eat some of the plant, they most likely will not experience any effects and if they do experience any, they will be mild (nausea, vomiting and diarrhea). The plants could be a potential choking hazard though, so it is a good idea to keep them where children and pets cannot reach them.

Mistletoe from the European mistletoe variety (*Viscum album)* is known to cause poisoning and death. This reputation has likely been incorrectly applied to the American mistletoe (*Phoradendron serotinum)* due to their shared common name. The vast majority of those that consume a couple of American mistletoe berries are unlikely to have any symptoms. If the leaves of American mistletoe are consumed, a patient may experience some GI upset.

Holly berries are toxic, but the boughs are okay. The leaves may cause symptoms, but they are less likely to be ingested because they are prickly. The berries may cause vomiting, diarrhea, dehydration, and drowsiness. Holly placed out of reach of children and pets may still have berries that fall off and end up being ingested.

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ALABAMA POISON INFORMATION CENTER
800-222-1222

Special Interest Articles

Did you know?

The Food and Drug Administration has announced that labeling for opioid analgesics, as well as medications used to treat opioid disorder, like buprenorphine, methadone, and naltrexone, will now require labeling that includes information about naloxone. Some states, including Arizona, Florida, Rhode Island, Virginia and Vermont, have laws mandating that opioids are coprescribed with naloxone.

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Jerusalem cherries look a lot like cherry tomatoes and can be tempting for children to eat as well. The cherries can cause gastrointestinal discomfort, salivation, bradycardia, tachycardia, hypotension and altered mental status. Keep these plants away from children and immediately call APIC if they have been consumed.

Christmas tree preservatives are unnecessary for trees and may cause stomach upset and vomiting in children and pets that swallow them. Home-made preservatives can be even worse for children continuing anything from sugar and corn syrup to aspirin and bleach. It is best to avoid these unnecessary concoctions and use regular water for trees. In fact, The National Christmas Tree Association recommends that ONLY use plain water is used and advises against using anything other than plain tap water.

DECORATIONS & TOYS

Batteries are everywhere and pose a major poison risk for small children if ingested or placed in the ear or nose. Button batteries are a big concern for ingestion by children due to their size - small enough to swallow and those ≥20mm are large enough to become stuck in the esophagus. If a battery becomes stuck, it can injure the esophagus in only 2 hours and require surgical removal. Batteries can be found in holiday cards, hearing aids, and many toys and electronics.

Magnets can easily be swallowed by children and result in serious injury and death. Small rare-earth magnets, small magnetic beads, small magnets in children's toys, and small refrigerator magnets all pose a threat. The most common magnets swallowed are the small magnetic beads sold as toys for adults to have on their office desk (photo below from healthychilden.org). When a child swallows 2+ magnets, they can become attracted inside the body, potentially trapping digestive tissue between them. This can also occur if a child swallows only one magnet and something else that is attracted to it.

Snow globes may contain ethylene glycol (the same component found in antifreeze formulations) ranging from 11-20%. This component raises concern for toxicity if small amounts of the contents are ingested.

Spray-on artificial snow may contain a solvent called **methylene chloride**. Inhalation of methylene chloride may cause mild symptoms such as nausea and headache or more severe symptoms such as seizures and chest pain. These products are available as aerosol spray cans and therefore they should not be sprayed in areas with poor air flow or near flames. Once the product dries, the methylene chloride evaporates and the snow-like product that is left is minimally toxic.

Dehydration packets can be found in new store-bought products like shoes, backpacks, and handbags. They contain silica gel in the form of clear round balls in a paper or plastic packet. They are labeled "DO NOT EAT" because these may present a choking hazard, but they are regarded as non-toxic.

Tinsel is another concern but not a toxic one. Ingestion of tinsel may cause a blockage and GI distress if consumed.

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FOOD & LIBATIONS

Alcohol poisoning can cause death in adults and children alike, but the risk is much higher for children. For children, this applies to alcoholic beverages as well as other tempting items that contain alcohol such as mouthwash and perfumes. Be sure to keep these items out of reach of children. Do not leave alcoholic beverages sitting around on surfaces where children can reach during the holiday festivities.

Food poisoning is a risk year-round and with the preparation of large holiday feasts it is important to practice proper food handling. While shopping and cooking, keep fruits and vegetables separate from meat, poultry, eggs and seafood. Always be sure to wash your hands, counters, cutting boards, knives, fruits and vegetables. Do not wash your meat, poultry or eggs though because this can splash around bacteria. Use a thermometer when cooking your food to ensure it is cooked hot enough to prevent food poisoning. When it is time to eat, food should not be left out for more than 2 hours. It is important that you chill your leftovers quickly so distribute them into smaller containers to allow them to cool faster in the refrigerator. Finally, as we all know, leftovers can be the best part of a holiday feast, but they all have their own specific time window for how long they will be safe to eat. Specifics on how long leftovers are safe as well as what internal temperature food should be cooked to can be found on foodsafety.gov.

https://www.foodsafety.gov/food-safety-charts/safe-minimum-cooking-temperature

https://www.foodsafety.gov/food-safety-charts/cold-food-storage-charts

Nicotine (cigarettes, e-cigarettes, lozenges/gum, patches) is so poisonous that a single cigarette butt is enough to poison a child. Other forms are extremely poisonous as well and can be more tempting to children. Lozenges and gum can be a great tool for an adult trying to quit smoking, but these products look like candy to a child. Liquid nicotine for e-cigarettes is an even more concentrated form that can be more enticing to a child because it often comes flavored as something sweet like candy. Always be sure to clean up after a party and keep all nicotine containing products out of reach from children and pets.

Visitor medications in purses or bags can pose an easy potential threat for children. It is easy for children to get into these medication containers, even if listed as child proof. “Child resistant” does not mean child proof! Always instruct your guests to put their medications somewhere that will be out of reach for children when they come to visit.

Finally, with all the festivities there will inevitably be a lot of cleaning involved. Most **household cleaners** contain surfactants which can cause GI upset and effects ranging from irritation to mucosal necrosis depending on the concentration of the product.

If you suspect a poison emergency has occurred during the holiday season or any other time, contact the Alabama Poison Information Center immediately at **1-800-222-1222**.

References on Page 4

Holiday Hazards Continued

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APIC Visits the Zoo to Learn about Snakes

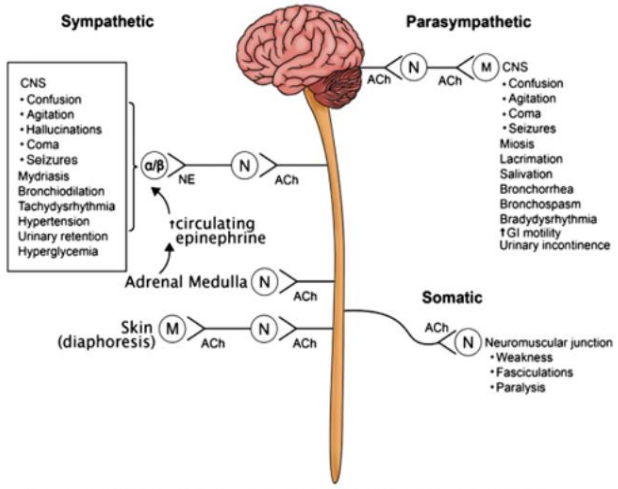
Pictured L-R- Erin Ryan, Mary Atwood, Meghan Ridner and Brian Whitworth (Samford PharmD Candidates), Ann Slattery, Will Rushton and LaDonna Gaines, Below- Meghan Ridner

Toxicity of Acephate in Mammals

By Brian Whitworth, Samford University PharmD Candidate

Organophosphates (OP) are a diverse group of chemicals that cause cholinesterase inhibition and are used as pesticides and chemical warfare agents. Over 50,000 have been synthesized and dozens are manufactured for use around the world. The APIC documented 39 OP exposures in 2019, approximately 5% of all insecticide exposures reported that year.

Inhibition of acetylcholinesterase (AChE) leads to a buildup of acetylcholine (Ach) at muscarinic and nicotinic synapses, leading to symptoms of cholinergic excess. Muscarinic effects include wheezing, drooling, lacrimation, vomiting, diarrhea, and miosis. Nicotinic effects including muscle fasciculations, weakness, respiratory failure, tachycardia, hypertension, muscle cramps, and mydriasis.



Source: L.S. Nelson, M.A. Howland, N.A. Lewin, S.W. Smith, L.R. Goldfrank, R.S. Hoffman: Goldfrank's Toxicologic Emergencies, Eleventh Edition
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Atropine is given to counteract the muscarinic effects and is titrated to effect to control respiratory secretions. Pralidoxime (2-PAM) is given to help speed the hydrolytic regeneration of AChE, lowering ACh concentrations and improving muscarinic and nicotinic symptoms; time to administration is very important as individual OP have different windows of time before the aging or phosphorylation of AChE is irreversible. Benzodiazepines are given to control seizures, but also mediate other symptoms of cholinergic excess by depressing the CNS and lowering the amount of ACh release.

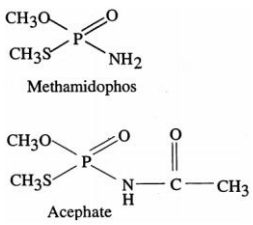

Fig. 1. Structural formulas of methamidophos and acephate.

Source: Comparative Biochemistry and Physiology Part C: Pharmacology, Toxicology and Endocrinology

Acephate is known to have less severe toxic effects in human exposures than other OP compounds and is classified as a slightly hazardous Class III pesticide by the WHO. A weak cholinesterase inhibitor, its toxicity is dependent on conversion to methamidophos, which is considered highly hazardous and classified as a Class IB pesticide. In mammals, this conversion is mediated by carboxyamidase which is inhibited by methamidophos. Studies evaluating acephate metabolism in rats and houseflies lead researchers to conclude that activation of acepahte in mammals is quickly stopped by its own metabolism.

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