Drug & Poison Information Center—Faculty of Pharmacy—Tanta University

Drug & Poison Information Bulletin

SUMMER 2018, VOLUME 5, ISSUE 2

Inside this issue:

The Unseen Victims of White Phosphorous Poisoning

White (or yellow) phosphorous is used in the manufacture of munitions, pyrotechnics, explosives, smoke bombs, rodenticides, and artificial fertilizers. It is generally found as a waxy, yellow, transparent solid. When exposed to air, it spontaneously ignites and oxidized rapidly to toxic fumes (phosphorus pentoxide). White phosphorus is toxic and can be absorbed into the body by inhalation, ingestion, or skin contact.

Systemic toxicity is classically divided into 3 phases. The first phase, the gastrointestinal phase, occurs a few minutes to 8 hours following poison exposure. Shock during this phase may be severe enough to cause death in 24 to 48 hours. The second phase, the asymptomatic phase, lasts for 8 hours to 3 days. The third phase, the multi-organ failure and central nervous system injury phase, may end in death.

Signs/Symptoms:

Eye exposure: causes severe eye irritation, lacrimation, blepharospasm, and photophobia. Phosphorus particles are caustic and may cause eye damage.

Inhalation exposure: eye and upper respiratory tract irritation are expected. Delayed onset of pulmonary edema is possible. Systemic effects may also occur.

Skin exposure: causes severely painful, yellow color, and garlic-like odor burns with possible skin penetration causing systemic effects.

ISO 9001:2008 Certified by IRQS

MGMT. SYS. RvA C 071

Ingestion exposure: feeling of warmth or burning pain in the throat and abdomen accompanied by feelings of intense thirst; nausea, vomiting, emesis, diarrhea, and severe abdominal pain; garlic odor to the breath, vomitus, and feces that are capable of causing burns on contact with skin; death may occur within 24 to 48 hours due to complete cardiovascular collapse.

First Aid:

Irrigate or place saline-soaked and/or water-soaked pads on areas of exposure to terminate further oxidation of phosphorus. Do not use an oily or greasy dressing because the element is lipid soluble and can penetrate into the tissue. Remove contaminated clothing to terminate further ignition. Ensure that the patient has an unobstructed airway. Monitor heart function and evaluate for hypotension, dysrhythmias, respiratory depression, hypoglycemia, electrolyte disturbances, and hypoxia. Administer oxygen in case of dypnea. Monitor the patient for signs of systemic effects and administer symptomatic treatment as necessary. phosphorus particles should be removed into a container of cold water to reduce risk to medical personnel and others. Seek medical attention immediately.

Long-Term Implications:

Supportive treatment is required to treat hypotension (using IV fluids), seizures (with benzodiazepines), correct hypocalcemia (with IV calcium gluconate or calcium chloride), restore normal heartbeat, plus other additional supportive treatment. Visualization of phosphorus particles may be enhanced under an ultraviolet (UV). With the exposed areas immersed in cold water (to avoid ignition) carefully remove all visualized phosphorus particles (either loose or imbedded). The use of cold water has the potential to induce hypothermia. Steps should be taken to guard against hypothermia. For eye exposure, consultation with an ophthalmologist is required.

References for further additional information:

- ***https://online.lexi.com/lco/action/doc/retrieve/docid/lexier/1795399?hl=phosphorus. Accessed on May 28, 2018.***
- ***https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750025.html. Accessed on June 2, 2018.***

By: Mai Mousa, Pharm D

FDA Approves First Factor Xa Inhibitor Antidote, Andexxa®

The U.S. Food and Drug Administration (FDA) has approved Andexxa® [coagulation factor Xa (recombinant), inactivated-zhzo], the first and only antidote indicated for patients treated with factor Xa inhibitors, such as rivaroxaban and apixaban, when reversal of anticoagulation is needed due to life-threatening or uncontrolled bleeding.

Andexxa received both U.S. Orphan Drug and FDA Breakthrough Therapy designations and was approved under the FDA's Accelerated Approval pathway based on the change from baseline in anti-factor Xa activity in healthy volunteers. Continued approval for this indication may be contingent upon post-marketing study results to demonstrate an improvement in hemostasis in patients.

The use of factor Xa inhibitors is rapidly growing because of their efficacy and safety profile compared to enoxaparin and warfarin in preventing and treating thromboembolic conditions such as stroke, pulmonary embolism, and venous thromboembolism (VTE). This growth has come with a related increase in the incidence of hospital admissions and deaths related to bleeding, the major complication of anticoagulation. In the U.S. alone in 2016, there were approximately 117,000 hospital admissions attributable to Factor Xa inhibitor-related bleeding and nearly 2,000 bleeding -related deaths per month.

About Andexxa

Andexxa is a modified form of the human factor Xa molecule. It binds to the factor Xa inhibitor and prevents it from inhibiting the activity of factor Xa and reverses the anticoagulant effects of the inhibitor.

Treatment with the agent has been associated with serious and life-threatening adverse events, including arterial and venous thromboembolic events, cardiac arrest, sudden deaths, and ischemic events, such as myocardial infarction and ischemic stroke. The most common adverse reactions in at least 5% of patients receiving Andexxa were urinary tract infections and pneumonia.

Table 1: Andexxa Dosing Regimens

Dose*	Initial IV Bolus	Follow-On IV Infusion
Low Dose	400 mg at a target rate of 30 mg/min	4 mg/min for up to 120 minutes
High Dose	800 mg at a target rate of 30 mg/min	8 mg/min for up to 120 minutes

*The e safety and effectiveness of more than one dose have not been evaluated.

Table 2: Andexxa Dose Based on Rivaroxaban or Apixaban Dose.

The recommended dosing of Andexxa is based on the specific factor Xa inhibitor, dose of factor Xa inhibitor, and time since the patient's last dose of the factor Xa inhibitor.

<table>
<tr><th rowspan="2">Factor Xa Inhibitor</th><th rowspan="2">Factor Xa Inhibitor Last Dose</th><th colspan="2">Timing of factor Xa Inhibitor Last Dose Before Andexxa Initiation</th></tr>
<tr><th>< 8 Hours or Unknown</th><th>≥ 8 Hours</th></tr>
<tr><td rowspan="2">Rivaroxaban</td><td>≤ 10 mg</td><td>Low Dose</td><td rowspan="4">Low Dose</td></tr>
<tr><td>> 10 mg / Unknown</td><td>High Dose</td></tr>
<tr><td rowspan="2">Apixaban</td><td>≤ 5 mg</td><td>Low Dose</td></tr>
<tr><td>> 5 mg / Unknown</td><td>High Dose</td></tr>
</table>

References:

- *https://www.medscape.com/viewarticle/896182. Accessed on May 6, 2018.*
- *http://investors.portola.com/phoenix.zhtml?c=198136&p=irol-newsroomArticle&ID=2347018. Accessed on May 6, 2018.*
- *https://www.portola.com/wpcontent/uploads/Andexxa-prescribing-information-pdf.pdf. Accessed on May 6, 2018.*

By: Bassant Maher, B. Sc.

Bisphenol A(BPA)..Is It Safe or Toxic?!

What is bisphenol A ?!

Bisphenol A is also called BPA. It is a chemical substance that is used to make light-weight, hard plastics found in bottles or cups that can be used many times. It may also be found in plastic dishes, linings of food cans, or water pipes. BPA-based plastic bottles are generally clear and tough. The primary source of exposure to BPA for most people is through the diet, while air, dust, and water are other possible sources of exposure.

Effects on the body:

BPA is an endocrine disruptor that was shown to affect the endocrine functions in animal studies. It may also affect the brain, the behavior, and the reproductive glands in babies and children. Other additional researches suggested a possible link between BPA and increased blood pressure.

However, according to the FDA, the BPA is safe at the very low levels that occur in some foods. This assessment is based on review of hundreds of studies. The FDA is continuing its review of BPA, including supporting ongoing research.

What can be done to avoid this health problem?!

1-USE:

- Water bottles that are labeled ***BPA-free.***
- Bottles made of plastic that you cannot see through, which does not have BPA.
- Glass, porcelain, or stainless steel containers instead of plastics.

2-DO NOT USE:

- Scratched food containers, cups, and plastic bottles. They may hold germs & release BPA.
- Plastics that have a 3 or 7 recycle code, or the letters ***PC*** printed on them.

3-AVOID HEAT:

- Do not put boiling water or very hot water in a bottle or container that has BPA.
- Do not use plastic containers in the microwave.
- Cool sterilized bottles to room temperature before adding formula or breast milk.

References:

- ***https://www.fda.gov/Food/IngredientsPackagingLabeling/FoodAdditivesIngredients/ucm355155.htm. Accessed on April 24, 2018.***
- ***https://online.lexi.com/lco/action/doc/retrieve/docid/disandproc/5100362. Accessed on April 25, 2018.***
- ***https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/expert-answers/bpa/faq-20058331. Accessed on April28, 2018.***

By: Marwa EL-Sayed, PGCPD.

Poisoning from Hand Sanitizers

Washing hands with soap and water is the best way to reduce the number of microbes on them in most situations. If soap and water are not available, an alcohol-based hand sanitizer that contains at least 60% alcohol may be useful.

Although alcohol-based hand sanitizers can inactivate many types of microbes very effectively when used correctly, people may not use a large enough volume of the sanitizers or may wipe it off before it has dried. Furthermore, soap and water are more effective than hand sanitizers at removing or inactivating certain kinds of germs, like *Cryptosporidium*, norovirus, and *Clostridium difficile*.

The problem:

Every year *The American Association of Poison Control Centers (AAPCC)* manage several thousand reports related to children ingesting hand sanitizer. In 2018, through April 30, poison centers received reports of 6,694 exposures to hand sanitizers by children 12 years and younger.

Many hand sanitizers come in brightly colored bottles, can be laced with glitter, and smell like food or candy. This type of packaging makes them very tempting to young children. While a child who licks a tiny amount of hand sanitizer off of his or her hands is unlikely to become sick, a child ingesting any more than a taste of hand sanitizer could be at risk for alcohol poisoning. This is because the amount of alcohol in hand sanitizer ranges from 40% to 95%.

Most hand sanitizer products contain over 60% ethyl alcohol, a stronger alcohol concentration than most hard liquors. By comparison, wine and beer contain about 10-15% and 5-10% alcohol, respectively. Alcohol poisoning can cause confusion, vomiting and drowsiness, and in severe cases, respiratory arrest and death.

Tips to prevent potentially harmful exposure to hand sanitizer:

1. Hand sanitizers should be kept well out of reach of children at all times, and used only with adult supervision.
2. When using hand sanitizer on yourself or others, apply a dime-sized amount to dry hands and rub hands together until completely dry.
3. If you suspect your child has ingested hand sanitizer, call Poison Help immediately. Do not wait for symptoms to develop.

References:

- *https://www.cdc.gov/handwashing/show-me-the-science-hand-sanitizer.html. Accessed on June 1, 2018.*
- *http://www.aapcc.org/alerts/hand-sanitizer/ Accessed on June 1, 2018.*

By: Bassant Maher, B. Sc.

Editorial Board

Address: Drug & Poison Information Center, Faculty of Pharmacy - Tanta University, El Geish Street, Tanta, Egypt.

E-mail: dic_tantauni@hotmail.com

Tel.: 0403336007 (7-241), 0403331577

If you want to receive the DPIC bulletin via E-mail please contact us via our e-mail