

Lye poisoning

Ella Joy Nogas,¹ Ameleen Bangayan,² Clarence Xlasi D Ladrero³

¹Poison Treatment and Control Institute, Southern Philippines Medical Center, JP Laurel Ave, Davao City, Philippines

²Department of Pediatrics, Southern Philippines Medical Center, JP Laurel Ave, Davao City, Philippines

³Research Utilization and Publication Unit, Southern Philippines Medical Center, JP Laurel Ave, Davao City, Philippines

Correspondence

Ella Joy Nogas,
toxicmd2015@gmail.com

Received

27 January 2022

Accepted

11 August 2022

Published online

16 August 2022

Cite as

Nogas EJ, Bangayan A, Ladrero CXD. Lye poisoning. *SPMC J Health Care Serv.* 2022;8(2):2. <http://n2t.net/ark:/76951/jhcs96sub>

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Lye (Filipino, Bisaya: *libiya*) is a strong alkaline solution, rich in potassium carbonate or potassium hydroxide. It is commercially available both as lye water and in powder form. Its most common use in Filipino cuisine is as a food additive in local delicacies such as *kutsinta*, *pichi-pichi*, and *suman sa libiya*. Other common foods that contain lye are ramen noodles, bagels, pretzels, and Chinese century eggs.¹ Lye water is clear, transparent, and odorless. It is often improperly stored in recyclable plastic water bottles or juice containers, or sometimes stored with other food additives, thus it can oftentimes be mistaken for ordinary water.² Food-grade lye is safe to use in small amounts for cooking, but it can be dangerous when consumed undiluted or straight from its container.

In the Philippines, accidental lye ingestion is common among children less than 6 years old.³ Most patients who accidentally ingest toxic amounts of lye are brought to the emergency room complaining of hot sensation on the mouth, lips, and palate, red and swollen tongue and/or lips, drooling of saliva, dysphagia, dyspnea, hoarseness of voice, and/or chest pain. Physical examination may show inflammation of the oral mucosa and epigastric tenderness. Acute complications of lye ingestion include edema, erosions, and ulcerations in the mucosa of the esophagus and stomach. When vomiting is induced during ingestion, lye can enter the lungs and cause aspiration pneumonia.⁴ In severe cases, lye ingestion can lead to perforation of the gastrointestinal tract and eventual death. Long term complications include esophageal stricture formation, i.e., abnormal narrowing of the esophagus with sloughing of mucosa, and an increased lifetime risk of esophageal cancer.⁵

For the past 5 years, 21 cases of accidental lye poisoning have been recorded in the Southern Philippines Medical Center. Majority of the cases occurred in children, demonstrating mild to moderate degrees of gastrointestinal tract injury, ranging from edema to blister and ulcer formations, upon endoscopy. Esophageal stricture formation was also observed in a few patients.

When lye is accidentally ingested, the patient should be brought immediately to the nearest health facility for initiation of treatment to prevent further damage to the gastrointestinal tract. No administration of any home remedy should be attempted. Vomiting must not be induced, and there should be no attempts to introduce any diluent by mouth prior to seeking medical attention.⁴ Measures that can be done at home to prevent accidental lye ingestion include proper packaging, labeling and storage of bottles containing lye water, and keeping lye out of children's reach.

Contributors

EJN, AB and CXDL contributed to the conceptualization of this article. EJN and AB wrote the original draft while CXDL rendered the original draft of the infographic. All authors performed the subsequent revisions, approved the final version, and agreed to be accountable for all aspects of this article and its corresponding infographic.

Acknowledgments

We would like to thank the Poison Treatment and Control Institute of the Southern Philippines Medical Center for providing us the video and other data on lye poisoning, which became the bases for the contents of this publication.

Article source

Commissioned

Peer review

Internal

Competing interests

None declared

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REFERENCES

1. Jainey. What is Lye Water (Lihya). 2018 Feb 3 [cited 2022 Aug 11]. In: Mama's Guide Recipes [Internet]. Philippines: Mama's Guide Recipes. c2022 - . [about 1 screen]. Available from: <https://www.mamasguiderecipes.com/2018/02/03/what-is-lye-water-lihya/>.
2. Copeland B. What makes ramen noodles alkaline? 2022 Mar 26 [cited 2022 Aug 11]. In: De Kooktips [Internet]. c2022 - . [about 1 screen]. Available from: <https://www.dekooktips.com/chicken-recipes/what-makes-ramen-noodles-alkaline.html>.
3. CBatac-Dizon MC, Cordero CP, Gregorio GV. Factors Associated with Severe Mucosal Injury of Esophagogastroduodenoscopy after Caustic Substance Ingestion in Pediatrics. *Acta Med Philipp* [Internet]. 2013 Jun 28 [cited 2022



What is lye?

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Signs & symptoms





Lye Poisoning

Complications





Immediate

-  Edema, erosions and ulcerations in the mucosa of the esophagus and stomach
-  Aspiration pneumonia
-  Death



Long term

-  Esophageal stricture formation
-  Increased lifetime risk of esophageal cancer

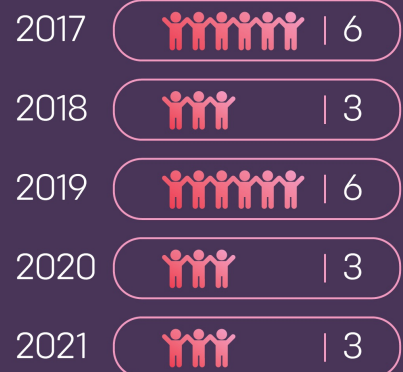
Management

-  Bring the patient immediately to the nearest health facility
-  Do not attempt to administer any home remedy
-  Do not induce vomiting
-  Do not attempt to introduce any diluent by mouth prior to seeking medical attention

Prevention

-  Properly package, label, and store bottles containing lye
-  Keep lye out of children's reach

Lye poisoning cases in Southern Philippines Medical Center



8 Mean age in years

Aug 11];47(2). Available from: <https://actamedicaphilippina.upm.edu.ph/index.php/acta/article/view/1348>.

4. Agency for Toxic Substances and Disease Registry. Medical management guidelines for sodium hydroxide (NaOH). [cited 2022 Aug 11]. In: Agency for Toxic Substances and Disease Registry [Internet]. Georgia: Agency for Toxic Substances and Disease

Registry. c2022 - . [about 2 screens]. Available from: <https://www.cdc.gov/TSP/MMG/MMGDetails.aspx?mmgid=246&toxid=45>.

5. Srivatsav A, Ghanayem R, Dahdal S, Khalaf N. Treatment of Esophageal Stricture After Lye Ingestion. *ACG Case Rep J*. 2020 Apr 7;7(4):e00348.

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SPMC JHCS OFFICE Research Utilization and Publication Unit, Acacia Room, Level 3 Outpatient Building, Southern Philippines Medical Center, JP Laurel Avenue, Davao City, Philippines

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