



Short Communication

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Natural Disinfectant Production Stem Kit

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Abstracts

HOCl, which is produced naturally by the defense system, can also be produced artificially and used for cleaning and disinfection purposes. Electrolyzed water (EW), commonly known as hypochlorous acid (HOCl), is a safe and environmentally friendly disinfectant that may abide by food safety requirements. HOCl decomposes in aqueous solution as $H^+ - OCl^-$ and denatures proteins. HOCl makes viruses harmless by creating chloramines and nitrogenous radicals by breaking down double-stranded DNA. In the work, A simple electrolysis training kit was created. Hypochlorous acid (HOCl) was electrolyzed in salt- aqueous solution. The device has the capacity to produce concentrations ranging from 5 ppm (1 ppm = 1 mg/L) to 30 ppm. This STEM app using electrolysis technology turns tap water into a safe disinfectant in just four minutes.

Keywords: Hypochlorous acid; Natural Disinfectant; STEM; Science Center

Introduction

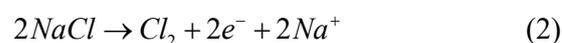
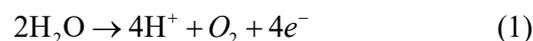
Hypochlorous acid (HOCl) is a comprehensive disinfectant that is sustainable and environment-friendly; therefore, it is considered a practical alternative [1]. It is non-toxic, non-irritant and non-corrosive at proper usage concentrations and relatively inexpensive. A potent oxidizing agent is hypochlorous acid (HOCl) [2]. It separates into H^+ and OCl^- in aqueous solution, denaturing and aggregating proteins [3]. Viruses can also be eliminated by HOCl by chlorination, which produces chloramines and nitrogen-centered radicals that break both single- and double-stranded DNA, rendering the nucleic acid worthless and the virus harmless. The purpose of this study is to show that it is possible that the hypochlorous acid can be produced with simple substances found at home in everyday life.

Material and Method

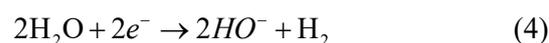
How is HOCl produced? On-site production of HOCl is possible via electrolysis, non-iodinated salt, and water. Anode and cathode

reactions 1,3 are given in scheme 1- 54.

Anode Reactions



Cathode Reactions



Natural Disinfectant Production Kit is given in figure 1. This Natural Disinfectant Production kit includes two 2B pen tips, a plastic bottle, and a 5V adapter. The system to make HOCl on site is a one-liter container which is filled with water. 2B pen tips were used as electrodes (Figure 1).



Figure 1: Natural Disinfectant Production Kit.

A gram of non-iodized salt is added to the water. The system has the ability to make 5 ppm to 30 ppm concentrations depending on which electrolysis time. The electrolyzed solution is completed in 3-5 minutes, when it is ready for use.

Discussion and Conclusion

The amount of existing chlorine obtained from the photometric measurement results with this set is 5-30 ppm. This value indicates that commercially available hypochlorous is suitable for use in hand sanitizer and household disinfectant. It is possible to produce your own disinfectant at home with a simple and inexpensive method.

Acknowledgement

None.

Conflict of Interest

No Conflict of interest.

References

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