

Summary of How to Prepare Disinfectant in the Lab and Study the Effect of Chlorine Effervescent Tablets against Some Pathogenic Bacteria and Fungi

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ABSTRACT

Objectives: The objective of the present study was to evaluate the antimicrobial activity of available chlorine effervescent tablet solutions.

Methods: Four bacteria and one fungi were used such as *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Candida albicans*. Strains were selected to evaluate the antimicrobial activity of the sodium hypochlorite solutions by the agar wells diffusion assay.

Results: The results were significantly different among the tested irrigating solutions: 5.25% sodium hypochlorite solution produced the highest inhibition areas; 5.25% sodium hypochlorite solution with a proteolytic enzyme and a surfactant, and 5.25% sodium hypochlorite gel with inorganic silicate showed the lowest zones of inhibition.

Sodium hypochlorite (NaOCl) is still the preferred irrigating solution, the mechanical flushing of debris from the canal, the ability of the solution to dissolve vital and necrotic tissues, its antimicrobial action, the low surface tension and the lubricating action; in addition, it is inexpensive, with a long shelf life, and it is easily available. NaOCl shows antiseptic properties due to the formation of hypochlorous acid and the subsequent release of chlorine, which is a very active bactericide. The objective of the present study was to evaluate the antimicrobial activity of available chlorine (sodium dichloroisocyanurate (NaDCC) effervescent tablet solutions. Four bacteria and one fungi were used such as *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Candida albicans*. Strains were selected to evaluate the antimicrobial activity of the sodium dichloroisocyanurate solutions by the agar wells diffusion assay were significantly different among the tested solutions: 10000 ppm NaDCC solution produced the highest antimicrobial activity with *Escherichia coli* compared with liquid bleach (Clorox®); while other organisms such as *Pseudomonas* and *Candida* were in a close effective compared with commercial product and 2000 ppm NaDCC solution showed the lowest zones of inhibition, so the antimicrobial activity of NaDCC that was prepared in the lab was the same effective with commercial product was used as standard to compare with and its concentration was 5% (50000 ppm). Even if all tested irrigating solution possessed antibacterial activity versus all tested bacterial strains, 3000 ppm NaDCC solution with liquid bleach 5% (Clorox®), and 1000ppm NaDCC sol. showed lower in vitro efficacy than 10000 ppm NaDCC solution.

INTRODUCTION

This study focused on prepared locally disinfectants and compared our product with imported product. So, we started to prepare this product according to the instructions that available on the bottle.

Moreover, the effecting study of this product on some local pathogenic bacteria and fungi. Our study found that a perfect results with *S. aureus*, *P. aeruginosa*, *E. coli* and *C. albicans*. These results were important to use this product instead of the imported product because the product is very cheap and easy to prepare either at laboratory or at home.

So, we advise all people to follow our methods to prepare their disinfectant by their selves.

One product was a liquid form (Clorox®) that used as its 5%

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(50000ppm) and another product was a solid for (Effervescent Chlorine Tablets) that was prepared into three different concentrations (2000, 3000, & 10000ppm) of sodium dichloisocyanurate.

The antimicrobial activity has evaluated by measuring diameter of inhibition zone and the tested microorganisms were *E. coli*, *P. aeruginosa*, *B. subtilis*, *S. aureus*, and *C. albicans*.

RESULTS

The results of this study showed a high antimicrobial activity with *Escherichia coli* compared with liquid bleach (Clorox®), while another organism such as *Pseudomonas* and *candida* were in a close effective compared with commercial product. The high effective of sodium dichloisocyanurate was in 10000 ppm whereas other concentration (3000ppm, 2000ppm) were of effective in all organism, so the antimicrobial activity OD NaDCC that was prepared in the lab was the same effective with commercial product was used as standard to compare with and its concentration was 5% (50000 ppm).

In the end, the effervescent tablets of NaDCC have strong antimicrobial activity and can be treated easily; furthermore, it has less hazard in compare with liquid irrigating solution. NaDCC is well established in the cleaning industry for both janitorial and hospital applications. NaDCC tablet formulations predominate as the favored method of chlorine disinfection. With the advent of the Health and Safety at Work Act, COSHH (the Control of Substances Hazardous to Health Regulations) and CHIP (the Chemicals Hazard Information and Packaging for Supply Regulations), there has been a move towards safer handling and use of chemicals [1].

REFERENCES

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