The ag nanoparticles was spherical and elongated

The selected disinfectant is a chemical substance (white powder, ...) thatused for disinfection of drinking water due to being effective, easy to use, andstable.

Furthermore, it was proven effective under field conditions (Fuqua2010). The efficacy of Ca(OCl)2 was tested against sixtybacterial strains isolated from two different water supplies using broth macrodilution method as described by Li et al. (2008) with minorchanges related to disinfectantconcentrations and exposure times. The disinfectant was tested at different concentrations (0. 01 and 0.

02mg/L) and exposure times (30, 60, 120 and 180 mins). Synthesis and characterization of AgNPs and AgNPs/Ca(OCl)2composite. The silver nanoparticleswere synthesized using chemical reduction method as described by Sileikaite et al. (2009). The silver nanoparticles were morphologicallycharacterized by transmission electron microscope TEM in National Research Center (NRC), Egypt. The shape of Ag nanoparticles was sphericaland elongated with the diameter of nanoparticles (NP) is ranged between 3.

45- 28. 85 nm as shown in (Fig 1). Evaluation methodThe bacterial isolates (sixty strains) were tested against both 50 and100 mg/L of AgNPs at different exposure times (10, 15, 30 and 60 mins). Afterthat, 100 mg/L of AgNPs was added to 0. 002 mg/L of Ca(OCl)2 disinfectantat a ratio (1: 2) in order to an enhancement of its performance against testedbacterial strains. The AgNPs/Ca(OCl)2 composites was shaking wellusing magnetic stirrer for 4hr continuously to avoid agglomeration of NP overthe incubation period then

the nanocomposites centrifuged at 3000 rpm for 15mins and washed by distilled water three times. Finally 100 ? l of freshly prepared isolated bacterial broth (24hr growth) were subjected to 15 mL of AgNPs/ Ca(OCl)2 nanocomposites at different concentrations (0.

001 and 0. 002 mg/L) andexposure times (10, 15, 30 and60 mins.) using broth macrodilution method as a method described by Li et al. (2008). Moreover, there was two conicalflasks were used as a control, the firstflask was containing inoculum and trypticase soya broth while the second flask wascontaining AgNPs/ Ca(OCl)2 and trypticase soya broth without inoculum. Preparation of biocidal filter paper using AgNPs/Ca(OCl)2. The filter paper is pure cellulose paper, porous and highly absorbent ofdiameters (0.

45mm). The porosity of filter paper allows microorganisms to comeinto contact with AgNPs/Ca(OCl)2 nanocomposite during waterpurification. The filter paper soaked overnight in 20 mL of AgNPs loadedCa(OCl)2 at a concentration of 0. 002 mg/L then removed from thesolution and rinsed by ethanol 70% followed by soaking in water for 5 minutes toremove the excess of un absorbed nanocomposites and finally drying the paper inan oven at 60° C for 1hour.

The shape of nanoparticles and its distribution infilter paper was examined by TEM. Nanoparticles (NP) diameter is ranged between7. 68 – 14. 34 nm as shown in (Fig 2.)Field trail for evaluating the biocidal filter paper. The biocidal activity of filter paper was tested against total viable (TVC)and indicator coliform bacteria (total and fecal coliform) counts in watersamples. A total of (n= 20) water sampleswere collected from water trough of both

supplies (tap and hand pump water). The samples were bacteriologically examined prior and post treatment throughoutpassing 100 mL of water samples on both non-treated filter paper and AgNPs/Ca(OCl)2filter paper for 10 minutes.

All non-treated and treated filter paper wereincubated on specific agar media (M-Endo LES and M-FC agar) at 37°Cfor 24 hrs. After that, the incubated plates were examined for identifying theabsence and/or growth of indicators bacteria (total and fecal coliform) counts inpre and post treated plates. Furthermore, water samples were cultured for totalviable counts (TVC) on plate count agar. The targeted bacteria were enumerated on its specificmedia as mention above to evaluate the efficacy and usability of biocidalfilter paper.