

## Different Disinfectants Efficiency of Fruits and Vegetables Available in Market of Kermanshah

Received: 19 May 2012

Accepted: 15 July 2012

Available online: 12 Mar 2013

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The fruits and vegetables are carrier microbial flora and in every stage of production, transportation, packaging, storage and sale to consumers are exposed to microbial contamination. Raw fruits and vegetables are suitable place for growing a variety of parasites and bacteria such as *Shigella*, *Pseudomonas aeruginosa* and *Campylobacter* that many of theirs can cause epidemic if the conditions have provide. The use of disinfectants is one of the most important ways to prevent diseases. This study was conducted to evaluate the different disinfections efficiency of fruits and vegetables in market of Kermanshah city (disinfectants 1, 2, 3) that the active ingredient in all three is benzalkonium chloride. The efficiency of three types of disinfectants was studied on removal microbial load of six types of vegetables (coriander, parsley, cress, leek, radish and onion). Initially, 90 g of each sample were collected and divide to 9 Unit 10 g. Then each of the three levels of disinfection (one, two and three times the recommended concentration) on the desired sample (10 g) was measured. For total count of microorganisms by culture medium Hetrotrophic Plate Count Agar (HPC) surface culture method, for the enumeration of coliforms by culture medium Violet Red Bile Agar (VRBA) pour plate method and finally for the enumeration of molds and yeasts by culture medium Yeast Glucose Chloramphenicol Agar (YGCA) surface culture method was used. This method was used for evaluation the effect of different disinfections by two bacteria clostridia and *Sterpetococ* as indicators gram-positive bacteria and for identify by two cultur medium sodium azayd and Litmus Milk respectively in this study. All sampling procedures and testing of the samples were according to standard methods for the examination of water and wastewater [1]. The result showed that none of the disinfection products with suggested concentration in this study is efficient for disinfection of fruits and vegetables. Even is not effective at a concentration of three times. The recommended concentration of all disinfectants was note efficient at the recommended range (99.99%). Only at concentrations twice was the average efficiency of 92.1%. Despite lower

than the relevant standard, but in comparison with the two concentrations above acceptable. Also, the efficiency none of disinfectants to disinfect vegetables and type of disinfectant used according to the active ingredient in all three of them did not depend on benzalkonium chloride. Furthermore, the result of differentiation test (IMViC) revealed that the positive samples include bacteria more resistant to disinfection of *Escherichia coli*, *Klebsiella*, *Enterobacter*, *Citrobacter* and *Aglomerens*. Shigeharu study showed that microbial contamination of vegetables was reduced after disinfection with sodium hypochlorite [2]. Also Samadi study showed that washing vegetables with tap water or treatment with detergent (333 ppm for 10 minutes) or benzalkonium chloride (92 ppm for 15 min) reduced the total microbial count, most probable number (MPN) of coliforms, MPN of fecal coliforms, and MPN of fecal streptococci by about 1.2 to 2.3 log [3]. In addition, the test relevant litmus milk and sodium azayd showed that evaluated disinfections contain the average efficiency of 76.13% removal of clostridia and the average efficiency 100% removal of *Streptococ* are both as gram positive indicators. Moreover, none of the three disinfectants to reduce mold and yeast did not affect and the average efficiency of all the three concentrations of disinfectants and research on all types of vegetables was zero.

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Please cite this article as: Almasi A, Dargahi A, Sadeghi E, Safaipoor N. Different disinfectants efficiency of fruits and vegetables available in market of Kermanshah. *Zahedan J Res Med Sci (ZJRMS)* 2013; 15(12): 45.