

SURFACE WATER SANITATION USING BACTERIOPHAGES AND NANOCOMPOSITE

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ABSTRACT

Surface water pollution is so dangerous matter that all must face and find solutions for that. This study aims to use develop more safe methods for water sanitation using bacteriophages and special nanocomposite which has been prepared by Sygam international company, Inchas industrial zone, Egypt according to a standard formula suggested by the material scientists, physics department, faculty of science, Benha University. For reaching this aim, surface water samples were collected, many pathogenic bacteria were isolated and defined, bacteriophages were detected and isolated, detected bacteriophages were used in sanitation as well as nanocomposite. Six bacterial species (*Aeromonas hydrophila*, *E. coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Proteus vulgaris* and *Enterococcus fecalis*) were isolated and identified. The bacteriophages infecting *Ps. aeruginosa* were the only bacteriophages detected. Sanitation using bacteriophages decreased the counts of *Ps. aeruginosa* in water samples under study with percentages of 64.3 and 78.35%. Sanitation using nanocomposite decreased the concentrations of heavy metals under study in the selected water sample to concentrations below the detection limits of Inductively Coupled Plasma-Optical Emission Spectroscopy. These results showed that both; bacteriophages and nanocomposite can be used as safe methods in water sanitation.

Key words: Sanitation, Bacteriophage, Nanocomposite.

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