Nano silver-coated polypropylene water filter : II. evaluation of antimicrobial efficiency

ABSTRACT

This research will improve our understanding of the microorganism removal effectiveness of the nano silver-coated polypropylene filter used in water purification. Silver nanoparticles were deposited on cylindrical polypropylene water filter by physical vapor deposition method using a modified Balzers machine. The enumeration of bacteria was done by membrane filter method. At a flow rate of 3L/hr and after 5h filtration all of the Escherichia coli cells were killed when the input water had a bacterial load of 103 colony-forming units (CFU) per mL. The inductively coupled plasma/mass spectrometry (ICP/MS) was used to determine any trace amount of the silver nano particles left in the water sample after filtration. Results showed that nano particles are stable on the water filter and are not washed away by water flow after 5h filtration. The nano silver-coated filter reported here has the potential to be used as an efficient water treatment technique.

Keyword: Nano silver; Polypropylene filter; Water treatment; SEM; Antibacterial