Survival of some Egyptian bacterial isolates in different water types

Osman G. A.

Bacteriology Lab. Water Pollution Research Department, Environmental Research Division, National Research Centre (NRC- 12622), Dokki, Giza, Egypt.

Abstract : Survival of bacteria in water exerts a public health concern. The aim of this work was to evaluate the survival of some pathogenic bacteria isolated from El-Rahawy drain and maintained for 4 months at room temperature in different water sources.

The initial bacterial counts for each bacterial isolate were 10^4 cfu/ml. Water samples were weekly collected from each tested water types for bacterial count using plate count agar poured-plate technique. Results showed that *Pseudomonas aeruginosa* and *Bacillus subtillus* were still alive in all tested water sources even after the end of the experiment (16 weeks).

In **sterilized distilled water** samples, complete $\log_{10}$ reductions were observed at the first and fourth weeks for *Salmonella* spp. and *E. coli*, respectively. Each of *Staphylococcus aureus* and *Streptococcus faecalis* reached complete die-off point at the third week of incubation.

Concerning **sterilized tap water** samples, complete $\log_{10}$ reductions were observed for *E. coli*, *Salmonella* spp., *Staphylococcus aureus* and *Streptococcus faecalis* at the 6th, 4th, 5th and 12th week of incubation, respectively.

In **sterilized groundwater** samples, viability of *Streptococcus faecalis* bacteria exceeded over the period of experiment with $\log_{10}$ reduction 3.5 cfu / ml, but other tested bacteria (except *Pseudomonas aeruginosa* and *Bacillus subtillus*) reached the die-off point during the experiment. Surprisingly, the log count of *Pseudomonas aeruginosa* showed increase in cell numbers from the 3rd week until 8th week by $\log_{10}$ counts ranging from 0.1 to 0.5 cfu/ml.

Regarding **sterilized seawater** samples, complete $\log_{10}$ reductions occurred for *E. coli*, *Salmonella* spp., *Staphylococcus aureus* and *Streptococcus faecalis* at the 7th, 5th, 13th and 9th week of incubation, respectively.

In conclusion, preservation of water having the possibility of bacterial contamination may exert public health hazards.

Keywords : Bacterial isolates, Survival, Distilled Water, Tap Water, Groundwater, Seawater.

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