Impact of blended tap water and desalinated seawater on biofilm stability

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\textbf{ABSTRACT}

Seawater, converted by reverse osmosis (RO) membrane into desalinated water when introduced to drinking water distribution systems and mixed with tap water of natural source, may affect the stability of existing biofilms attached to the pipeline. A continuous flow system consisting of four identical, parallel 1 L CDC biofilm reactors was installed. The reactors were operated with dechlorinated tap water for 55 days. Thereafter, water made of 100\% tap water, 100\% RO desalinated seawater, and 70/30 and 30/70 mixed tap water/desalinated seawater were continuously applied. Analyses of the bulk water heterotrophic plate count (HPC), biofilm HPC, total carbohydrate content (TCC), and denaturing gradient gel electrophoresis (DGGE) was carried out. No obvious changes in HPC and TCC were observed in bulk water. But, continuous feed with 100\% desalinated water resulted in higher bacterial count than the other treatments. The DGGE data showed that higher portion of the RO desalinated seawater resulted in less biodiversity.

\textit{Keywords:} Biofilm; Desalinated water; HPC; TCC; DGGE