

عنوان مقاله:

Photocatalytic inactivation of Escherichia coli using a system of TiO₂ and UV irradiation

محل انتشار:

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خلاصه مقاله:

A system of TiO₂ (degussa P25) and UV light (supplied from a UV lamp) was used to inactivate Escherichia coli in a batch reactor. various parameters affecting the photocatalytic process were examined. Total disinfection occurred in less than 100 min whereas in system with UV irradiation only, it did not happen. Effect of initial bacteria concentration was studied and it was found that inactivation of bacteria follows a first order kinetics. The effect of TiO₂ was investigated in the range 0.25 to 1 g/l. There was an optimal concentration of TiO₂ which was found to be 0.5 g/l at 30 W UV intensity. The effect of dissolved salts, Mg(NO₃)₂, Ca(NO₃)₂ on photocatalytic inactivation rate was also studied. inactivation rate in 2 mmol/l solutions of these salts was lower comparedwith deionized water. This was attributed to absorption of UV light by anions and cations. Detrimental effect of calcium nitrate on inactivation rate was .greater than magnesium nitrate

کلمات کلیدی:

photocatalysis,e.coli,disinfection,titanium dioxide,UV

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