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ELECTROCHEMICAL DISINFECTION OF EFFLUENTS FROM POULTRY WASTE ANAEROBIC DIGESTION

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Abstract

The electrochemical disinfection of effluents from poultry waste anaerobic digestion was investigated. The influences of electric current densities, electrolyte species and dosages, effluent turbidity and concentrations on the bacterial inactivation were determined. The efficiency of inactivating bacteria in the effluents by electrochemical treatment increased with increasing the electric current density and electrolyte dosages. Treatment with the addition of HCl as electrolytes resulted in the highest inactivation efficiency of bacteria in effluents, followed by adding NaCl and Na₂SO₄. A 100% inactivation of bacteria in the 10% (v/v) diluted effluents was obtained in the treatment at an electric current density of 40 mA/cm² and 2 g/L NaCl addition for 120 min. Moreover, treatment of the effluent with a lower turbidity or concentration had a higher bactericidal efficiency. Results indicate that electrochemical technology may be a promising way to the disinfection of anaerobic digested effluents from livestock wastes with environment friendly and improve the wastewater reuse.

Key words: anaerobic digested effluents, disinfection, electrochemical treatment, poultry wastes

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