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Engineering Rheology of Electrolytes using Agar for Improving the Performance of Bioelectrochemical Systems

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Abstract

The present study is focused on enhancing the rheological properties of the electrolyte and eliminating sedimentation of microorganisms/flocs without affecting the electron transfer kinetics for improved bioelectricity generation. Agar derived from polysaccharide agarose (0.05-0.2%, w/v) was chosen as a rheology modifying agent. Electroanalytical investigations showed that electrolytes modified with 0.15% agar display a nine-fold increase in current density (1.2 mA/cm^2) by a thermophilic strain (*Geobacillus* sp. 44C, 60 °C) when compared with the control. Sodium phosphate buffer (0.1 M, pH 7) electrolyte with riboflavin (0.1mM) was used as the control. Electrolytes modified with 0.15% agar significantly improved chemical oxygen demand removal rates. This developed

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