

ABSTRACT

This research was done to obtain the bio-kinetic coefficients for the bio-treatment of dairy-industry wastewater in a suspended growth batch reactor or SGBR. This research work was conducted in a laboratory scale batch reactor which is considered to be a prototype of the aeration tank segment of an activated sludge treatment system. Dairy industry wastewater samples were collected from a dairy industry located at Dankuni, near Kolkata on regular time interval and also in different seasons to neglect seasonal variation and establish mean values of the main wastewater parameters. A simulated synthetic sample was made according to the evaluated characteristics of dairy-wastewater. Study of Kinetic parameters in batch reactor was carried out to obtain kinetic coefficients (Y , K_s , k_d and k). Isolation and identification of the most potent strains for both the carbon oxidation and nitrification study was done and by using those strains biokinetic coefficients with pure culture was determined. Similar studies were done using microalgal strains *Chlorella* and *Spirulina* for the post bacterial treated wastewater. The process has also been carried out in the later phase of the study in pilot scale bioreactor as a scaled up process system. Finally Response Surface Methodology was implemented for the statistical validation of the present experimental study.