

Enzyme pretreatment to reduce sludge using produced protease by Bacillus sp.

김정래, 심상준*
성균관대학교
(simsj@skku.edu*)

Pretreatment will change the floc structure and enhance the solubility of sludge solids. The dissolved components can either be used to improve the efficiency of a subsequent biological degradation process or for the recycling of useful components. Considering that enzyme pretreatment process is effective for sludge reduction, enzyme was produced directly from microbial cultures to make up for disadvantage of high cost. We found the optimum strain, medium and conditions for maximum activity. We found proteases are most effective class of enzymes in enzyme pretreatment. We produced the protease in Bacillus licheniformis and Bacillus subtilis for enzyme pretreatment. The optimum medium was SYE by Bacillus subtilis and enzyme showed activity within temperature range of 30-50°C and pH between 7-10. We pretreated excess sludge using produced protease in SYE by Bacillus subtilis. The enzyme-pretreatment by produced protease increased SCOD of excess sludge.