Today the increase in urban population world over with concomitant growth in wastewater treatment plants has caused production of large volumes of wastewater sludge, which utilization and disposal are of the most difficult and expensive. Sludge generated from municipal wastewater treatment plants are mainly primary sludge and activated sludge, in which the activated sludge comes from the secondary treatment. Among the products that can be produced from the sludge are biofuel (biodiesel, bioethanol), enzyme, and biosurfactant. Pretreatment of sludge can increase the production yield and speed up the degradation of organic matter. There are various pretreatment methods for this purpose. The goal of the present study was to find the most efficient pretreatment for activated sludge to produce ethanol.

Saccharomyces cerevisiae, an ethanol producer strain, was grown on both pretreated and untreated sludge. In order to release the nutrients present in the sludge three different pretreatments, i.e. acidic, basic, and ultrasonic were applied. The ability of growth of S. cerevisiae on the pretreated and untreated sludge was compared using CFU method. The results showed that, among the applied pretreatments, ultrasonic may be the most efficient pretreatment to open up the structure of sludge biomass. According to the results of this study S. cerevisiae could growth on ultrasonic pretreated sludge. However the ability of this microorganism to produce ethanol must be identified. Additionally, in order to maximize nutrient releasing, the conditions of the pretreatment need to be optimized.