

Removal of micronutrients from anaerobic sludge during incubation with molasses stillage

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Molasses stillage contain high concentration of K (7 to 9 g/L), sulphate (3 to 9 g/L) and heavy organic load (60 to 100 g/L). K ion is one of the physicochemical parameters to study for the biochemical interaction with anaerobic microorganisms because its behaviour in the anaerobic environment is different, and it

limit the availability of micronutrients to the bacterial matrix. Laboratory experiments were carried out to study the removal of micronutrients from the bacterial matrix when incubating the molasses stillage with sludge adapted to anaerobic conditions. Molasses stillage was sampled after 6, 12, 24, 48 and 72 h for the analysis of the following metals: Cu, Zn, Na, Co, Mo, Ni, Mg, Ca and Fe. Mo, Ni and Co were found to be absent in the molasses stillage as well as in sludge. Among the micronutrients Zn, Cu and Fe were gradually removed from the sludge during the incubation with molasses stillage. For the experiments, tap water and synthetic molasses stillage without K were served as control. From this study it is evident that heavy concentration of K ions in the molasses stillage removed the important micronutrients which are necessary for the metabolic activities of the anaerobes from the sludge matrix.