

Methods of processing municipal solid wastes (MSW) are provided whereby concurrent enzymatic hydrolysis and microbial fermentation of wastes results in liquefaction of biodegradable components as well as accumulation of microbial metabolites. Liquefied biodegradable components are then separated from nondegradable solids to produce a bioliquid characterized in comprising a large percentage of dissolved solids of which a large fraction comprises some combination of acetate, ethanol, butyrate, lactate, formate or propionate. This bioliquid is, itself, a novel biomethane substrate composition, which permits very rapid conversion to biomethane. Methods of biomethane production are further provided using this bioliquid and using other biomethane substrate compositions produced by concurrent enzymatic hydrolysis and microbial fermentation of organic materials.