Volatile fatty acid platform for biofuel production

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The various technologies to convert biomass to usable fuels have been developed and many processes have been commercialized up to recently. The typical platforms mostly researched are (1) sugar, (2) thermochemical (syngas), (3) carbon-rich chains, and (4) biogas platform. The biogas platform producing methane gas from municipal solid wastes through anaerobic digestion (AD) processs is composed of rapid acidogenesis and slow methanogenesis. The acidogenesis stage indicates the production step of volatile fatty acids (VFAs), which are short-chain fatty acids composed of mainly acetate and butyrate, and rapidly produced by the natural consortia of mixed anaerobic bacteria. Because the AD process converts all parts of biomass (carbohydrates, lipids and proteins) to VFAs, is suitable to organic wastes treatment, and does not need high cost pretreatment step and additional hydrolysis enzymes, a new platform with versatile application can be created if the VFA can be used for other biofuels in addition to biogas.