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Cyanobacterial production of alka(e)nes

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Rapidly growing demand for energy and environmental concerns about carbon dioxide emissions stimulate the development of renewable biofuels. Due to efficient photosynthetic capability, robust growth, and established genetic modification system, cyanobacteria are recently used for production of different biofuel and biochemical molecules by genetic engineering and showed great potentials as the next-generation microbial cell factories. Alka(e)nes possess higher energy density, hydrophobic property and compatibility with existing liquid fuel infrastructure, which are the predominant constituents of gasoline, diesel, and jet fuels. Our recent research progress in biosynthesis of cyanobacterial alka(e)nes will be presented. The diversity of hydrocarbon production profiles of cyanobacterial species, the enzymatic engineering of aldehyde deformylating oxygenase (ADO) through both directed evolution and rational design, and the construction of cyanobacteria mutants with the higher alka(e)ne-production efficiency, will be discussed.

Possibilities pelletizing biomass from pruning olive, fruit and vineyard

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In this paper, a study of technical and economic feasibility for the use of woody biomass from agricultural origin of olive groves, vineyards and fruit, as raw material in a pellet manufacturing plant in the province of Badajoz (Spain), was developed. The main objective is the recovery an abundant biomass produced in this area which nowadays has no use, to manufacture wood pellets because as raw material for their production (pine) is no longer sufficient to meet the demand for raw materials over 38 factories operating in Spain. To this end, first of all, an analysis is performed to find optimal points for the location of production plants pellets. This analysis allowed us to identify an optimal location for these plants and gathering area of 30 km, for which the costs of collection and transport are calculated. Besides that, the physical and chemical characteristics of these biomass and its possibilities of pelleting are discussed. With these data, the analysis of the technical and economic feasibility of the construction of a pelletizing plant from biomass studied is done.