APPLICATION OF CALB LIPASE INMOBILIZED ON INORGANIC SUPPORTS FOR BIOFUEL PRODUCTION.

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The application of biocatalysis in the transesterification process of triglycerides (TG) allows to integrate the glycerol in the form of Monoglyceride (MG), greatly increasing the yield of the biodiesel production process. Thus, by selective ethanolysis, for each mole of TG, 2 moles of fatty acid ethyl esters (FAEE) and 1 mole of MG are obtained. Being this a mixture with physicochemical characteristics viable for its use as biofuel, previously patented as "Ecodiesel"[1].

In this case, it is expected the optimization of the production of this catalytic system, a commercial CALB lipase immobilized by physical adsorption on other inorganic supports, specifically Periodic Mesoporous Organosilicates (PMO) materials and amorphous siliceous materials MS-3030 functionalized with anchored octyl groups. After its synthesis, the yield and its evolution along time have been determined for this concrete reaction. It has also been verified the vigorosity and stability of the biocatalytic system. Standard reaction conditions are applied, which were previously checked with other similar enzymatic systems[2]. According to the obtained results, we could affirm that these biocatalytic systems would be feasible to develop, optimize and improve a new methodology to obtain the integration of glycerol as the different molecules of MG together with FAEE, in the selective ethanolysis of TG, therefore producing Ecodiesel.

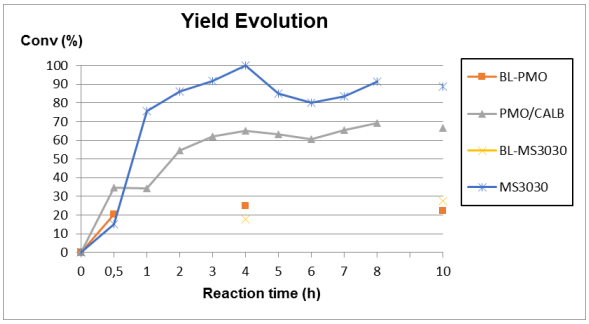

Figure 1. Yield evolution of the selective transesterification reaction operating under standard reaction conditions: 6 ml of oil, 1.75 ml of EtOH, 30 °C, 25 µL of 10 N aqueous NaOH solution, 300 rpm of agitation during 10 h. Applying 0.1 g of CALB / PMO and 0.05 g of CALB / MS-3030.

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