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Effect of water and super absorbent polymer (SAP) content on the efficiency of production biodiesel by liquid enzyme catalyst

Dinh Thi My Huong and Chia-Hung Su
Ming Chi University of Technology, Taiwan

Water is the factor need to attend on the esterification to produce biodiesel by enzyme catalysts because of its complicated influences on the catalyst activity and stability of enzyme as well as the productivity of reaction. Some studies conclude that some lipases need to be maintained for its proper structure by the certain amount of water. On the other hand, water is the by-product of the ester reaction, hence the high-water content exists in the reaction media causes the back-forward reaction, consequences to reduce the yield. Therefore, this study drives to identify the suitable amount of water for assisting activation of liquid enzyme catalyst and investigate the using SAP to absorb the produced water. The effect of water content on the enzyme activity was assigned through discussed the efficiency of the esterification with molar ratio of oleic acid to methanol 1:3 at the temperature of 25 °C, catalyst amount of 10 wt.% and varied water amount of 0 to 30 wt.% (base on the fatty acid mass) for 1 hour and 3 hours. Another reaction was carried out with the condition similar to above reactions and added 5% (w/w oleic acid) of SAP amount to study the ability of maintaining the esterification. Results illustrated that the conversion was increased obviously from 0% to 95 % with added water content increased from 0 wt.% to 30 wt.%. Meanwhile the conversion rate was improved significant with using SAP, the yield reached to 95% with added water amount of 10 wt.% for only 1 hour.

Biography

Dinh Thi My Huong has completed her Bachelor's degree from Da Nang University of Technology, recently pursued Master's program of Biochemistry at from Ming Chi University of Taiwan. She is currently the Lecturer of Da Nang College of Technology.

myhuongdinh@gmail.com