Transesterification of tomato seed oil: Influence of temperature and type of alcohol on fatty acid esters yield

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Tomato seed oil is a side product from tomato industry that represents a potential alternative source for biodiesel production. In this work main factors that influence the transesterification process were studied.

To study the influence of the type of alcohol on fatty acid esters yield, four different alcohols were used. Transesterification was carried out in alkali conditions. As catalysts, sodiummethoxide, sodiumethoxide, sodium-1-propoxide and sodium-1-butoxide were used, prepared by dissolving metalic sodium into respective alcohols.The temperatures of transesterification were between 40-100ºC.

Regarding the influence of the temperature we can assert that in the case of methanol the highest conversion into methylesters was registred at 90ºC with a yield of 92.8%, in the case of ethanol the highest conversion into ethylesters was registred at 100ºC with a yield of 91.6%, in the case of 1-propanol the highest conversion into 1-propilylesters was registred at 60ºC with a yield of 74%, in the case of 1- buthanol the highest conversion into 1-buthylesters was registred at 70ºC with a yield of 58%.

A clear trend could be seen that lower chain alcohols produce higher yields of esters only at high temperatures, which might have to do with the polarity that might influence the contact surface with the catalyst.

The information obtained in this preliminary trials will help to optimize conditions towards economic and feasible methods, regarding the utilization of tomato seed oil for biodiesel production.