

## **The possibility of use by – products for synthesis of emulsifiers**

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In the last years the interest in use of materials originated from natural sources, e.g. vegetables to produce attractive products still grows. According to that, also the synthesis of these products should be adequate to the green chemistry requirements. The typical example observed in recent years focuses on utilization of bioglycerol – the by - product of global biodiesel manufacturing. The still growing production of biodiesel results in accumulation in the market significant quantities of this product. In this study an economically and environmentally sustainable synthesis of emulsifiers realized by direct esterification of glycerol fraction in microemulsion system was investigated.

There were determined the kinetic parameters of the reaction leading to program the composition and properties of the obtained products.

It was stated, that programmed glycerol esterification in the presence of selected surfactants concentration leads to obtain modified emulsifiers with desired hydrophilic – lipophilic properties. It allows the potential use of these products in different dispersion systems. There were estimated the possibilities of use of these products to stabilization of W/O and O/W emulsions. In order to evaluate the effectiveness of the obtained emulsifiers there were prepared emulsion and the influence of chemical structure of the emulsifiers and the role of dispersed phases were investigated. It should be mentioned that in emulsion formulations there were used fruit seed oils (e.g. apple, strawberry, raspberry and blackcurrant). These oils, which are by products - in this case from juice production in food industry, characterize valuable composition of fatty acids and relatively high concentration of tocopherols.