

## Properties of chemical interesterified mixtures of tomato seed oil with coconut oil †

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**Abstract:** Interesterification is one of the methods of obtaining structured triacylglycerols, the nutritional and physicochemical properties of which are modified in relation to the naturally occurring ones. An important aspect of this reaction is that it changes the structure and composition of triacylglycerols, but does not affect the natural structure of fatty acids. This is very beneficial as it allows all fatty acids with a health-promoting effect to remain intact. Another advantage of this process is that it does not produce trans fatty acids.

The aim of this work was the analytical evaluation of structured lipids synthesized by chemical interesterification of vegetable oil blends. The mixtures of tomato seed oil and coconut oil at weight ratio 1:3, 1:1 or 3:1 respectively were interesterified for 2 hours at the temperature of 60°C in the presence of chemical catalyst – sodium methoxide. Oxidative stability of interesterified mixtures was determined using the calorimetric method. The determination of fatty acid composition was carried out by gas chromatographic analysis. The positional distribution of fatty acids in the internal and external positions of triacylglycerols was based on the ability of the pancreatic lipase to selectively hydrolyze ester bonds in the sn-1,3 positions. Peroxide value and acid value were determined using titration method.

Results of research shows that interesterification has influence over reduction of oxidation induction time. The higher the peroxide value, the shorter the oxidation induction time and therefore the lower the oxidative stability of the samples containing more tomato seed oil. The distribution of fatty acids in the mixtures after interesterification was different from that in the analyzed oils. The essential fatty acids from tomato seed oil were incorporated into triacylglycerol structures of coconut oil after modification.

**Keywords:** chemical interesterification; sodium methoxide; coconut oil; tomato seed oil; structured lipids

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**Citation:** Quispe-Rivera, E.; Tucta-Huillca, F.; Silva-Jaimes, M.; Gonzales-Barron, U.; Cadavez, V. Optimization of Pigment Extraction from Quinoa Flour Fermented by *Monascus purpureus* Supplemented with Sodium Chloride. *Biol. Life Sci. Forum* 2022, 2, x.  
<https://doi.org/10.3390/xxxxx>

**Academic Editor:**

Published: 1 October 2022

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