

Production of Trans-free Palm-based Edible Oil Blends and Enzymatic Interesterified Structured Lipids with Balanced Fatty Acid Profile for Cooking and Solid Fat Formulation Applications

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Abstract

Several blends of palm olein (POo), super olein (SOo) and palm stearin (PS) with sunflower (SFO), soybean (SBO), rice bran (RBO), mustard (MO), olive (OO) and sesame (SMO) oils were prepared in different ratios to obtain improved blends with desired fatty acid profile and physicochemical properties as an alternate to PHO trans-free oils/fats. Among the prepared edible oil blends, the 6:4 (w/w) blends of POo/SOo with SFO and SBO, 2:8 (w/w) POo:RBO and 1:1 (w/w) blend of SOo:SMO, 1:1 /4:6 (w/w) blends of PS with RBO and SMO were found to have balanced FA profiles closer to AHA/JMHW/WHO recommended SFA:MUFA:PUFA ratios of 1:1:1/1:1.5:1/1:1.5:0.7 and also desired physico-chemical properties. These blends were further processed for enzymatic interesterification (IE) employing Lipozyme TLIM in a specially designed bioreactor to obtain trans-free IE structured lipids (SLs) for potential use in cooking and trans-free fat formulation applications. In addition, the developed palm-based edible oil blends and the respective IE products can help the stake holders in replacing PHO/vanaspati, which in turn can play a significant role in implementing the FSSAI regulation of reducing the trans fats to 2% in the country by 2022.

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