# The composition of edible oils modifies β-sitosterol_γ-oryzanol oleogels Part I: Purified triglyceride oils

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## Abstract

The role of solvent composition, in particular, minor oil components on sterol/sterol ester oleogels, has been studied recently [1]. Reportedly, deterioration products hamper network formation and modify the gel's macroscopic properties, probably due to alterations of the scaffolding elements' interactions. However, the role of the FA composition of TAGs has not yet been addressed. In this study, minor oil components of three vegetable oils with varying degrees of unsaturation (iodine values) were removed, and the oils were chemically and physically characterized before and after the treatment. Consequently, β sitostero/γ-oryzanol oleogels were produced, and the gel-sol (DSC) and sol-gel (rheology) transitions were monitored. Moreover, large and small deformation tests were performed, and the results were linked to oil parameters. In contrast to minor oil components, the FA composition has little impact on oleogel properties. The decline in gel hardness with IV is possibly linked to a lower solvent viscosity. However, a considerable drop in gel-sol transition temperature was observed with increasing IV indicating fewer elements of scaffolding. That was linked to the rapid formation of primary oxidation products in purified flaxseed oil during oleogel preparation, impairing tube formation. Similar to previous results on deterioration products, these minor components seem to aid network strength at low concentrations resulting in similar transition enthalpies and G'. That might be due to shifted network interactions in the presence of molecular species with functional groups. In the second part of this study, these modified interactions in the presence of selected minor components will be discussed.

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