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# Effects of Oil Type on Sterol-Based Organogels and Emulsions

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## Abstract

The present study investigates the effect of oil type on the formation, morphology and mechanical properties of phytosterol-based organogels. The formation of organogels can be satisfactorily predicted with a criterion based on Hansen Solubility Parameters (HSPs), provided that the sterol and sterol ester in these systems assemble as tubules. When structures other than tubules are formed, the predictability of the HSP-based criterion becomes void. In cases where organogelling occurred, the morphology and mechanical properties of the tubular network of the gels and water-in-oil emulsions were investigated. The findings revealed that the structure of the tubular network formed in oils with different compositions, could be grouped based on the dielectric constants of the oils. Curly and bundled tubules which formed networks, were observed in gels prepared with low dielectric constant oils (i.e. decane and limonene). For oils with a moderate dielectric constant (i.e. castor oil and sunflower oil), the tubules became less curly and straighter. Upon increasing the dielectric constant of the oil (eugenol), individual