**Stable oil-in-water emulsions using an hydrophobically modified xanthan**

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Polysaccharides are widely employed in many industries such as food or cosmetic mainly to stabilize oil-in-water emulsions and to control their rheological properties. Among the others, xanthan gum is the most used due to its outstanding thickening properties of aqueous solutions. However, because of its poor interfacial properties, it requires the addition of an emulsifier to disperse and stabilize the oil droplets. Unfortunately, the use of low molecular weight surfactants has many disadvantages related to toxicological and environmental considerations. On this basis, macromolecular surfactants have been developed during the last decades, most being synthetics while the nowadays demand of natural ones is considerably growing. To overcome this problem, octyl residues were grafted onto the backbone of xanthan to confer new amphiphilic properties1. Moreover, xanthan can adopt two different conformations2, with distinct rheological properties3 depending on the experimental conditions: an ordered semi-rigid helical structure or a disordered flexible coil.

The objective of the present work is to study and understand the phenomenon involved in the stability of oil-in-water emulsions containing amphiphilic xanthan.

Oil-in-water emulsions using no surfactant but containing pristine or modified xanthan have been studied and compared. As expected in emulsion, unmodified xanthan is not able to stabilize the emulsions as phase separation occurred within only few hours. Oppositely, emulsions obtained with modified xanthan are stable over months (see fig. 1).

These results clearly demonstrate the high potential for hydrophobically modified xanthan as emulsion’s stabilizer which has been studied as a function concentration and grafting density.



***Figure 1****. Oil in water emulsions containing 1g/L of pristine xanthan one day after preparation (left) and modified xanthan 2 months after preparation(right)*

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