

## **Stabilization of Vegetable Oil Emulsions by Grape Seeds Tannins**

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Food and non-food valorization of vegetable oils is traditionally done in organic solvents, at high temperature, at drastic pHs, leading to the production of non eco-friendly wastes. Enzymatic reactions in emulsions are an interesting alternative, but as water and oil are immiscible, interfaces are created and have to be stabilized. In this work we used phenolic compounds obtained from grape seeds as stabilizers.

Parameters influencing the stability of emulsions, such as the tannin structures and concentrations, the pH and the ionic strength of the aqueous phase, and the fat phase concentration were optimized. Emulsions stabilized with tannins were compared with emulsions obtained in the same conditions using model emulsifiers as poly(vinyl alcohol) (PVA) and with Emulgin<sup>®</sup>.

In certain physico-chemical conditions, the condensed tannins allowed to obtain a stability equivalent to that of the PVA. The oil-in-water formed emulsions were up to 50 % of methyl oleate, with drop mean sizes in the micrometer range. A more detailed characterization was done by conductimetry, laser granulometry (droplets size distribution), and rheology. At last, tannins effects on enzymatic activity were investigated. Depending on their concentration and on the lipase used, a slight inhibition was observed, which might be overcome.