

Functional Yoghurt Enriched with Microencapsulated Olive Leaves Extract Powder Using Polycaprolactone via Double Emulsion/Solvent Evaporation Technique

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Abstract : Olive leaves (OLs), the main by-product of the olive oil industry, have a considerable amount of phenolic compounds. The exploitation of these compounds represents the current trend in food processing. In this study, OLs polyphenols were microencapsulated with polycaprolactone (PCL) and utilized in formulating novel functional yoghurt. PCL-microcapsules were characterized by scanning electron microscopy, and Fourier transform infrared spectrometry analysis. Their total phenolic (TPC), total flavonoid (TFC) contents, and antioxidant activities (DPPH, FRAP, ABTS), and polyphenols bioaccessibility were measured after oral, gastric, and intestinal steps of in vitro digestion. The four yoghurt formulations (containing 0, 25, 50, and 75 mg of PCL-microsphere/100g yoghurt) were evaluated for their pH, acidity, syneresis viscosity, and color during storage. In vitro digestion significantly affected the phenolic composition in non-encapsulated extract while had a lower impact on encapsulated phenolics. Higher protection was provided for encapsulated OLs extract, and their higher release was observed at the intestinal phase. Yoghurt with PCL-microsphere had lower viscosity, syneresis, and color parameters, as compared to control yoghurt. Thus, OLs represent a valuable and cheap source of polyphenols which can be successfully applied, in microencapsulated form, to formulate functional yoghurt.

Keywords : yoghurt quality attributes, olive leaves, phenolic and flavonoids compounds, antioxidant activity, polycaprolactone as microencapsulant

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