

## β-Carotene nanodispersions: preparation, characterization and stability evaluation

## **ABSTRACT**

The aim of the present study was to investigate the preparation of -carotene nanodispersions as potential active ingredients for food formulations. Nanodispersions containing -carotene were obtained by a process based on an emulsificationóevaporation technique. The preparation method consisted of emulsifying an organic solution of -carotene in an aqueous solution containing emulsifier using two different homogenizers (a conventional homogenizer and a microfluidizer), followed by direct solvent evaporation under reduced pressure. The influence of different homogenizing conditions (pressure and cycle) and two organic/aqueous phase ratios on particle size parameters and content of -carotene was investigated. In addition, the stability of -carotene nanodispersions was carried out at a storage temperature of 4 °C. The particle size distribution of -carotene in nanodispersions was demonstrated with a laser diffraction particle size analyzer and the retention of -carotene in the prepared nanodispersions was studied by high-pressure liquid chromatography. In general, homogenization pressure and cycle had significant (P < 0.05) effects on various particle size parameters. A volume-weighted mean diameter (D4,3) of -carotene nanoparticles, ranging from 60 to 140 nm, was observed in this study.

**Keyword:** Emulsification-evaporation; -carotene; Nanodispersion; High-pressure homogenization; Particle size analysis