

## Polymorphism determination of two formulations of a spread margarine and fat blend used by X Ray Diffraction (XRD) and Fourier Transformer Infrared (FTIR)

Anis Chikhoun

University of Mentouri Constantine, Republic of Algeria

In margarine and many food products, fat content is in a crystallized or semi-crystallized state at storage or use temperatures. Triglycerides, like the majority of long chains compounds, can exist in various crystal forms called polymorphism. Margarine had now grown into a recognized industry. Newer and better methods for the production of margarine were continually introduced. The major effort in margarine production should be for the product to be in the  $\beta'$  crystal form as it would then be smooth, creamy and homogenous. In this work, our interest is focused on the study of polymorphism of a spread margarine, produced in a pilot plant. Two formulations (MF1 and MF2) are then produced using two different oil blends. The study of polymorphism in margarine is of a great interest for food industry. In order to achieve this aim, two spectroscopic methods are used: X Ray Diffraction (XRD) and Fourier Transformer Infrared (FTIR). The polymorphic forms in the samples studied were determined by X-ray diffraction (XRD) on a Philipps X'PERT diffractor (Philipps X'PERT PANalytical, Almelo, the Netherlands) according to Liu & al. (2010). Before FTIR analysis, a preparation of the samples is required. The protocol of preparation followed is that recommended by SHIMADZU company (2008). Analysis was carried out according to Koca & al. (2010) on a FTIR spectrometer (IR Affinity-1 FTIR SHIMADZU, Kyoto, Japan). The two techniques showed the presence of the following polymorphic forms:  $\alpha$ ,  $\beta'$  and  $\beta$  with prevalence of the  $\beta'$  polymorphic form.

### Biography

Anis Chikhoun has studied at A/Mira University, Bejaia in Algeria where he got his engineering degree in Food Sciences in 2008 at the age of 24. Then, he studied and got his master's degree at the age of 27 years from Mentouri University, Constantine, Algeria. He was a Ph.D student at A/ Mira, Bejaia in Algeria since November 2011 and he was recruited as a lecturer assistant at INATAA Mentouri University, Constantine in Algeria since December 2011. His major is Food Technologies and he makes a study about texture and polymorphism of margarine manufactured on a pilot plant and improvement of its preservation using natural plant extracts and essential oils.

anis.chikhoun@gmail.com