

# Candelilla Wax-Based Oleogels: A New Perspective in Solid Fat Production

Sabina Andreea AVASILOAIE, Doina TIMOFICIUC, and Sorina ROPCIUC\*

Faculty of Food Engineering, Stefan cel Mare University of Suceava, 720229 Suceava, Romania.  
E-mails: sabina.avasiloaie@student.usv.ro; doina.timoficiuc@student.usv.ro;  
sorina.ropciuc@fia.usv.ro(\*)

\* Author to whom correspondence should be addressed

## Abstract

The research aimed to obtain and characterize new fats with zero trans and low saturated fatty acid content. Natural candelilla wax was used as an oleogelator in a percentage of 9% to build oleogel systems based on vegetable oils. Candelilla wax (DW) was used because it has a high oil binding power in a stable gel structure. Candelilla wax (CW) is a natural plant wax derived from *Euphorbia antisiphilitica* Zucc, which is grown in the arid regions of northern Mexico. Notably, CW has emerged as a promising potential substance for use in the development of food formulations. Furthermore, as a food additive, CW application may guarantee safe and high-quality foods. Oleogels were obtained using olive oil, grape seed oil, sunflower oil, walnut oil and hemp seed oil. All the obtained oleogels were analyzed physically, chemically, rheological and texturally. The property of the oleogels to expel oil during the storage of the oleogels was determined, the peroxide index, the color, the elastic and viscous properties of the oleogels and the textural properties were determined. All formulations presented similar color parameters in CIEL\*a\*b\* space, viscosity high and texture parameters specific to hard oleogels. Oleogelation is an alternative process to improve the nutritional properties of food by creating soft-matter structures with the same functionality as commercial fats (shortenings). Candelilla wax lipids have been found to have great potential for use as trans-fat substitutes in the development of good quality food products.

**Keywords:** Oleogelation process; Physicochemical properties; Oils; Rheological properties

