



## Oil-Based Nanoparticles Containing Alternative Vegetable Oils (Grape Seed Oil and Almond Kernel Oil): Preparation and Characterization

Juliana S. ALMEIDA <sup>1</sup>, Luciane JEZUR <sup>2</sup>, Marcia C. FONTANA <sup>1</sup>, Karina PAESE <sup>3</sup>,  
Cristiane B. SILVA <sup>2</sup>; Adriana R. POHLMANN <sup>4</sup>, Silvia S.GUTERRES <sup>3</sup> & Ruy C.R. BECK <sup>1\*</sup>

<sup>1</sup> Programa de Pós-Graduação em Ciências Farmacêuticas,  
Departamento de Farmácia Industrial, Universidade Federal de Santa Maria, Santa Maria, RS Brazil;

<sup>2</sup> Curso de Farmácia, Universidade Federal de Santa Maria, Santa Maria, RS, Brazil;

<sup>3</sup> Faculdade de Farmácia, Universidade Federal do Rio Grande do Sul (UFRGS),  
Av. Ipiranga, 2752, 90610-000, Porto Alegre, RS, Brazil;

<sup>4</sup> Departamento de Química Orgânica, Instituto de Química,  
Universidade Federal do Rio Grande do Sul (UFRGS), CP 15003, 91501-970, Porto Alegre, RS, Brazil

**SUMMARY.** The use of two alternative vegetable oils (grape seed oil and almond kernel oil) to prepare nanoparticulated delivery systems (nanocapsules and nanoemulsions) for active substances was evaluated. They were prepared by interfacial deposition of preformed polymer (poly-ε-caprolactone) or spontaneous emulsification, respectively. All formulations presented nanometric size, polydispersity index below 0.30, negative zeta potential and spherical-shaped particles. Benzophenone-3, as a model substance was efficiently entrapped in these systems, independent on the type of oily phase. Its association did not alter significantly the physicochemical properties of the nanoparticle dispersions, which remained adequate until 6 months of storage. Nanocapsules and nanoemulsions prepared with both vegetable oils were suitable to delay benzophenone-3 photodegradation under UV radiation.

**KEY WORDS:** Almond kernel oil, Grape seed oil, Nanoparticles.

\* Author to whom correspondence should be addressed. *E-mail:* ruybeck@smail.ufsm.br