

**TITLE**

**Colloidal nanocarriers based on starch for drug delivery of aminolevulinic acid: Preparation, characterization and in vitro skin permeation**

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This work presents the development of nanostructured systems to controlled delivery of hydrophilic drugs, as aminolevulinic acid (ALA). ALA is a photosensitizing agent and was nanoencapsulated with aim to use in photodynamic therapy. Actually, this drug has some limitations mainly related to the chemical stability and process of encapsulation. The new system proposes to overcome these limitations by using Colloidal Nanocarriers (CNs) composed by starch as a biopolymeric encapsulation matrix. The CNs were prepared by nanoemulsification (using high pressure homogenization) of an aqueous solution containing starch and ALA in a silicone phase composed by a surfactant based on silicone and dimethicone. After that, water was extracted from the nanoemulsion to design the formation of CNs. The nanocarriers were characterized with respect to their viscosities, particle size (DLS), morphology (SEM), chemical stability, drug loading and *IN VITRO* skin permeation. The colloidal nanocarriers ALA loading shows a particle size in a nanometric scale (nearly 330nm), fluid aspect (about 150cPs of viscosity), spherical morphological and high encapsulation efficiency (nearly 85%). The *IN VITRO* skin permeation studies demonstrated an increased permeated amount for nanocarrier ALA-loading compared to free drug. New colloidal nanocarriers were developed based on a biopolymer using a simple process of nanoemulsification and water extraction. This method allowed to fabricate a chemically stable and nanometric colloidal carrier in a silicone phase, which perform a high capacity to load hydrophilic molecules and delivery drug into basal skin layer.

**Biography**

Natália NP Cerize graduated in Pharmaceutical Sciences at the University of São Paulo in 2007 and she is currently PhD student at USP with emphasis on pharmaceutical technology, drug delivery system and nanostructured products to topical application; has experience at Stiefel Laboratories R&D area. Currently she is Researcher at the IPT-SP, in the Laboratory of Chemical Processes and Particle Technology.