

# Redispersible lipidic nanoparticles obtained by Fluid Bed Drying

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## Abstract

Formulation of aqueous dispersions of lipidic nanoparticles is an elegant way to enhance and control drug bioavailability, ameliorate stability, and mask bitterness of some drugs. They are interesting vectors for oral delivery of lipophilic and, to a certain extent, hydrophilic substances. Their production can be done without the use of organic solvents, this make this kind of formulation ideal for pediatric use. [1]

Therefore, these systems can present some instability phenomena, in order to prevent eventual issues, lipidic nanoparticles are classically dried by spray-drying or lyophilisation technics into reconstitutable powders, the commun of these technics is their highly cost witch limited their use at large scale in cosmetic and pharmaceutical industries.[2],[3]

Fluidized bed dryers are frequently used in industrial applications and also in the pharmaceutical industry, uniform and rapid drying is achieved by passing heated air through a product layer under controlled velocity conditions to create a fluidized state. Solution containing lipidic nanoparticles can be nozzled and be rapidly dried within air flow.[4]

In this work, we prepared lipidic nanoparticles adapted for pediatric use, two stable formulations containing Gelucire 50/13<sup>®</sup> and Compritol 888 ATO<sup>®</sup> were produced by ultra sonication method, these suspensions were characterized (aspect, particle size, zeta potential, drug loading and encapsulation ratio) before and after spraying into a fluid bed dryer. Several drying mediums were compared, and polyols seemed to be the most suitable medium for this use.

A comparison between Fluid Bed Drying and classical drying methods (lyophilization and spray drying) was performed, the comparison took into consideration quality of the obtained powder and its redispersibility, drug stability during the process and the effect of the drying method on particle size, the benefit of each method was highlighted.

## Key words

Lipidic nanoparticles, fluid bed drying, spray drying, lyophilization, pediatric drug.

## References

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