Formulation and nebulization of fluticasone propionate-loaded lipid nanocarriers.

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Résumé en anglais	Inhaled fluticasone propionate (FP) is often prescribed as a first-line therapy for the effective management of pulmonary diseases such as asthma. As nanocarriers offer many advantages over other drug delivery systems, this study investigated the suitability of lipid nanocapsules (LNCs) as a carrier for fluticasone propionate, examining the drug-related factors that should be considered in the formulation design and the behaviour of LNCs with different compositions and properties suspended within aerosol droplets under the relatively hostile conditions of nebulization. By adjusting the formulation conditions, particularly the nanocarrier composition, FP was efficiently encapsulated within the LNCs with a yield of up to 97%, and a concentration comparable to commercially available preparations was achieved. Moreover, testing the solubility of the drug in oil and water and determining the oil/water partition coefficient proved to be useful when assessing the encapsulation of the FP in the LNC formulation. Nebulization did not cause the FP to leak from the formulation, and no phase separation was observed after nebulization. LNCs with a diameter of 100nm containing a smaller amount of surfactant and a larger amount of oil provided a better FP-loading capacity and better stability during nebulization than 30 or 60nm LNCs.
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