

Accepted Manuscript

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PII: S0022-3549(17)30499-9

DOI: [10.1016/j.xphs.2017.07.003](https://doi.org/10.1016/j.xphs.2017.07.003)

Reference: XPHS 868

To appear in: *Journal of Pharmaceutical Sciences*

Received Date: 30 January 2017

Revised Date: 15 June 2017

Accepted Date: 6 July 2017

Please cite this article as: Elisei E, Willart JF, Danède F, Siepmann J, Siepmann F, Descamps M, Crystalline Polymorphism Emerging from a Milling Induced Amorphous form: The Case of Chlorhexidine Dihydrochloride, *Journal of Pharmaceutical Sciences* (2017), doi: 10.1016/j.xphs.2017.07.003.

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CRYSTALLINE POLYMORPHISM EMERGING FROM A MILLING INDUCED AMORPHOUS FORM: THE CASE OF CHLORHEXIDINE DIHYDROCHLORIDE

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Abstract

In this paper, solid state amorphization induced by mechanical milling is shown to be a useful tool to explore the polymorphism of drugs and their mechanism of devitrification. We show in particular how the recrystallization of amorphous chlorhexidine dihydrochloride obtained by milling reveals a complex polymorphism that involves several polymorphic forms. Two new crystalline forms are identified, one of them appearing as a highly disordered precursor state which however clearly differs from the amorphous one. Several interpretations are here proposed to describe the puzzling nature of this phase. Additionally, the possibility to amorphize ChxHCl by milling allowed to determine the main physical characters of the amorphous state which cannot be obtained through the usual

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